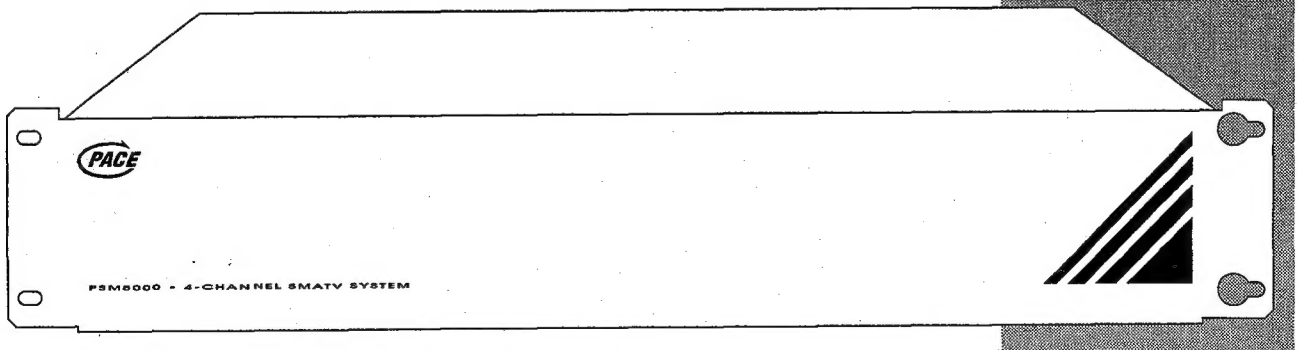
Service Manual

PSM 8000 ▪ SMATV SYSTEM

PSM 8000



Contents

TECHNICAL SPECIFICATION

Tuner

Input frequency	:	950 to 2050 MHz
Input signal level	:	-65 to -30 dBm per channel
Total input	:	-15 dBm max.
Channel bandwidth	:	27MHz standard or switchable 27/18 MHz or 27/36 MHz options (factory set)
LNB supply	:	fixed 18 V ±0.5 V
Input return loss ratio (RLR)	:	10 dB
Local oscillator leakage	:	66 dBµV max. (at F-type input)
Input impedance	:	75 Ω
Static threshold	:	8 dB max.
EIRP	:	43 dBpW max.
Noise figure	:	12 dB max.

Video

Video output level CVBS	:	1 V ±10% into 75 Ω
MAC baseband	:	250 mV p-p at crossover frequency (1.3 MHz)
External video input level	:	0.5 V to 1.5 V p-p
Differential gain	:	-10% min., +10% max. (10% to 90% APL, 4-step)
Differential phase	:	-20° min., +20° max. (10% to 90% APL, 4-step)

Audio

Output level	:	500 mV rms into 600 Ω
Total harmonic distortion (THD)	:	less than 2%
Signal to noise ratio	:	50 dB min. (unweighted)
Input level	:	500 mV rms into 600Ω for full subcarrier deviation *(excess input will be clipped to prevent overmodulation onset of clipping 500 - 600 mV rms)*

UHF Remodulated Output

Modulation scheme	:	negative modulation, double sideband
Output frequency	:	any CCIR channel (21 to 69 with 8 MHz channel spacing) or adjustment in 250 kHz steps using software fine tune facility.
Output level	:	-15 dBm per channel (+94 dBµV)
Output return loss ratio (RLR)	:	6 dB min.
Spurious output	:	approved to Standard VDE 0855 Part 10
Sound subcarrier	:	optional — 5.5 MHz ±15 kHz (PAL G) or 6.0 MHz ±15 kHz (PAL I) or 6.5 MHz ±15 kHz (PAL K) (factory set)

Power Supply

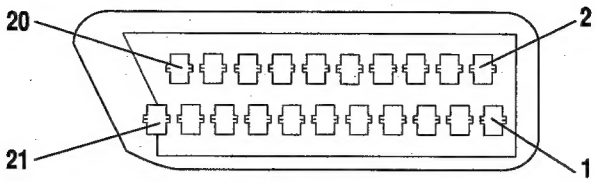
Line input	:	187 to 264 V AC 50 Hz
Power	:	45 W max.
LNB output	:	+18 V 400 mA max., short circuit protected and series diode protection

Operating/Storage Conditions

Operating temperature range	:	+5 °C to +40 °C
Operating relative humidity range	:	20% to 80% non-condensing at 25 °C
Storage temperature range	:	-20 °C to +70 °C
Storage relative humidity range	:	10% to 90% non-condensing

EXTERNAL DECODER SCART CONNECTIONS

Socket Viewed from Rear Panel



PIN DESIGNATIONS

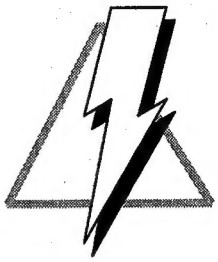
PIN	DECODER SCART
1.	RIGHT audio output
2.	RIGHT audio input
3.	LEFT audio output
4.	Audio ground
5.	Ground
6.	LEFT audio input
7.	N/C
8.	External Decoder status input
9.	Ground
10.	N/C
11.	N/C
12.	Serial data I/O port
13.	Ground
14.	N/C
15.	N/C
16.	N/C
17.	Video ground
18.	Ground
19.	Baseband video output
20.	Baseband video input
21.	Ground (casing)

SAFETY

This decoder has been designed and built in the UK to provide years of trouble-free service. The decoder has been manufactured to meet international safety standards but, as with any electrical equipment, care must be taken if you want to obtain the best results and operate the decoder safely.

To obtain the best results from this decoder, it is important that you read this manual completely, especially the safety instructions below.

CONNECTION TO THE MAINS SUPPLY

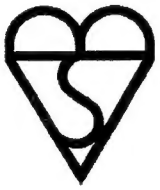


This apparatus operates within the range of 220-240 V AC, 50 Hz mains supplies. DO NOT CONNECT IT TO DC MAINS. The lead is supplied terminated at one end with a connector to be inserted into the mains input socket on the rear panel of the apparatus.

Mains Lead Plug Connections (UK and Eire)

The mains lead supplied may or may not have a non-rewireable (moulded) plug. Please see the section marked with an asterisk (*) if the supplied mains lead does not have a non-rewireable plug fitted.

Mains leads fitted with a non-rewireable (moulded) plug incorporate a fuse, the value of which is indicated on the pin face of the plug. Should the fuse need to be replaced, an ASTA or BSI approved BS 1362 fuse must be used of the same rating, the marking on the device should be as shown below.



If the fuse cover is detachable always refit the cover after replacing the fuse. NEVER use the plug with the fuse cover omitted.

If the fitted plug is not suitable for the users socket outlets it should be cut off, after having first removed the fuse, and an appropriate plug fitted in its place. If this new plug contains a fuse its value should be the same as that removed from the non-rewireable plug.

The severed plug must be destroyed immediately to avoid the possible shock hazard should it be inserted into a 13A socket elsewhere.

***IF YOU NEED TO FIT A MAINS PLUG THEN FOLLOW THE INSTRUCTIONS GIVEN BELOW:**

Important: The wires in the mains lead are coloured in accordance with the following code:

BLUE - Neutral (N) **BROWN** - Live (L)

As these colours may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

The wire coloured BLUE must be connected to the terminal marked with the letter N or coloured BLUE or BLACK. The wire coloured BROWN must be connected to the terminal marked with the letter L or coloured BROWN or RED. On no account connect either of these wires to the terminal marked E or coloured GREEN or GREEN and YELLOW.

Before replacing the plug cover, make certain that the cord grip is clamped over the sheath of the lead; not simply over the two wires.

A fused plug must be fitted with a 3 A fuse complying with BS 1362. If you are using a non-fused plug, an external fuse must not exceed 5 A.

SAFETY PRECAUTIONS

WARNING: Do not power up the unit until all the cables have been connected.

NOTE: Drawings in this manual show a 2-pin moulded plug, which is standard in most countries except the UK. For the UK, you must use a 3-pin plug incorporating a 3A fuse complying with BS1362. See the preceding page.

GENERAL PRECAUTIONS

•***REMEMBER*** *SAFETY FIRST*•

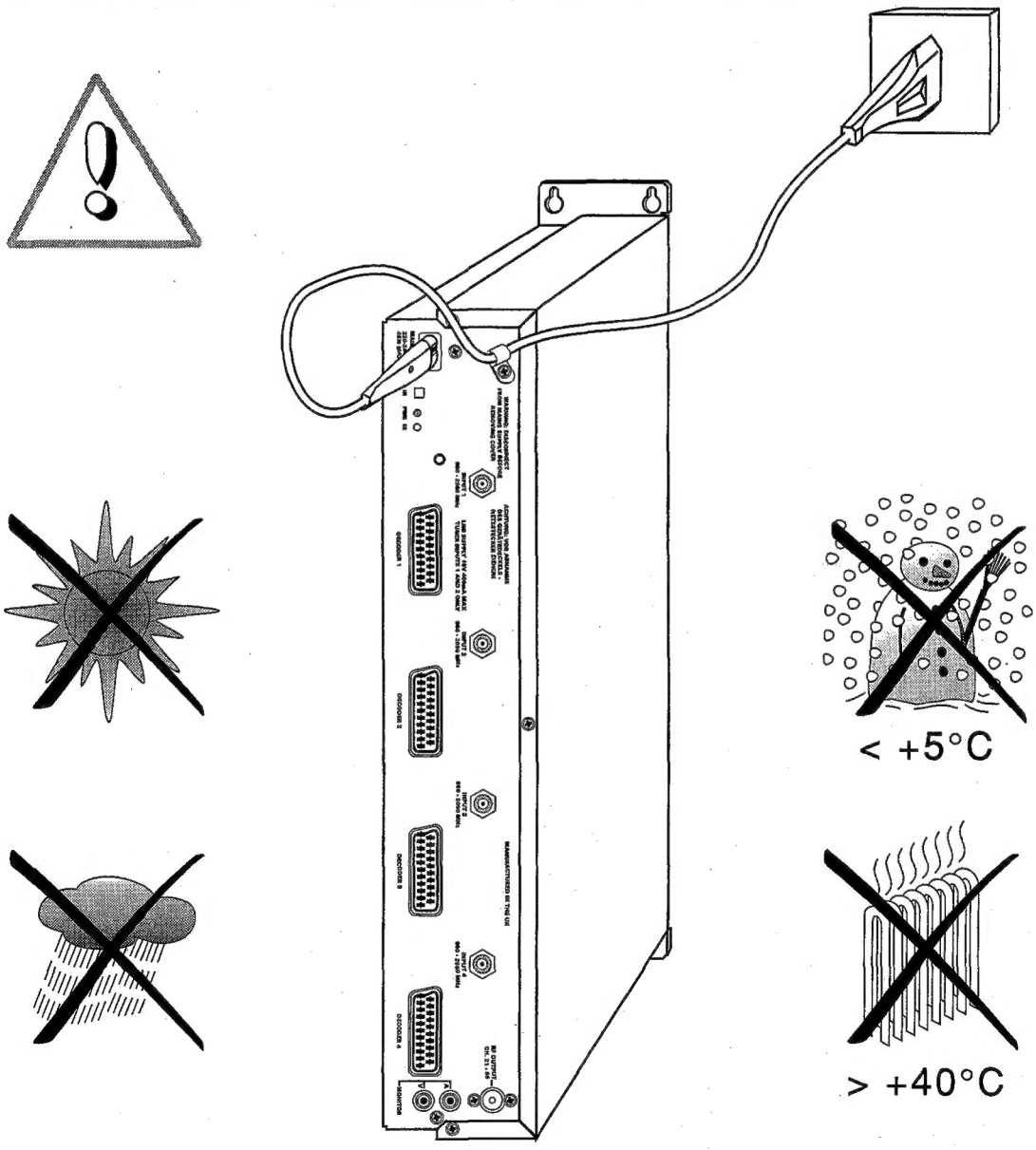
Always disconnect the unit from the mains supply before removing or re-installing any component, circuit board, module or any part of the assembly.

Before switching the unit on always confirm that the voltage rating label on the back of the unit matches the voltage for your country.

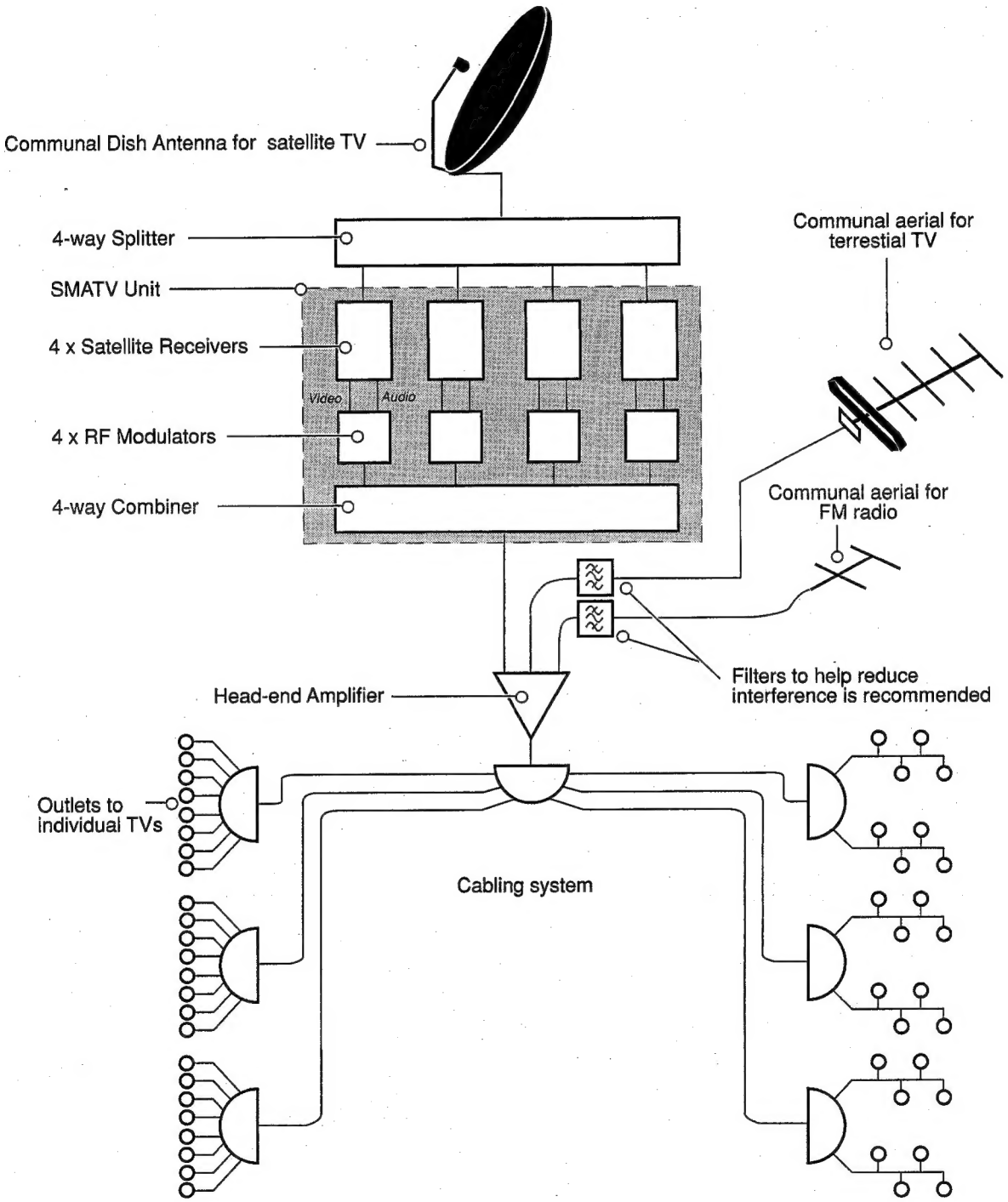
Do not spray any chemicals on or near the unit.

Faulty components must be replaced with the correct value and rated component by a competent engineer. Failure to do so could invalidate safety approvals.

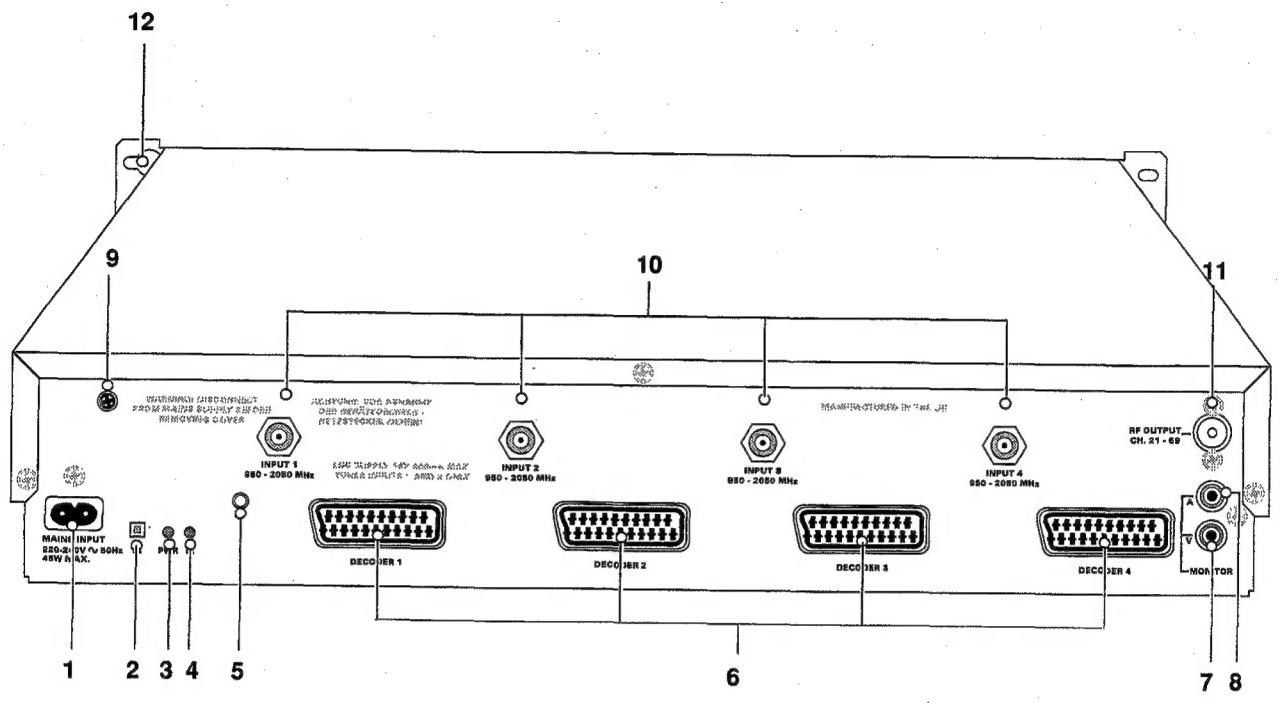
CAUTION*: Wrong substitution of electrolytic capacitors may result in an explosion hazard.*



SMATV SYSTEM BLOCK DIAGRAM



SMATV UNIT EXTERNAL COMPONENT IDENTIFICATION DIAGRAM



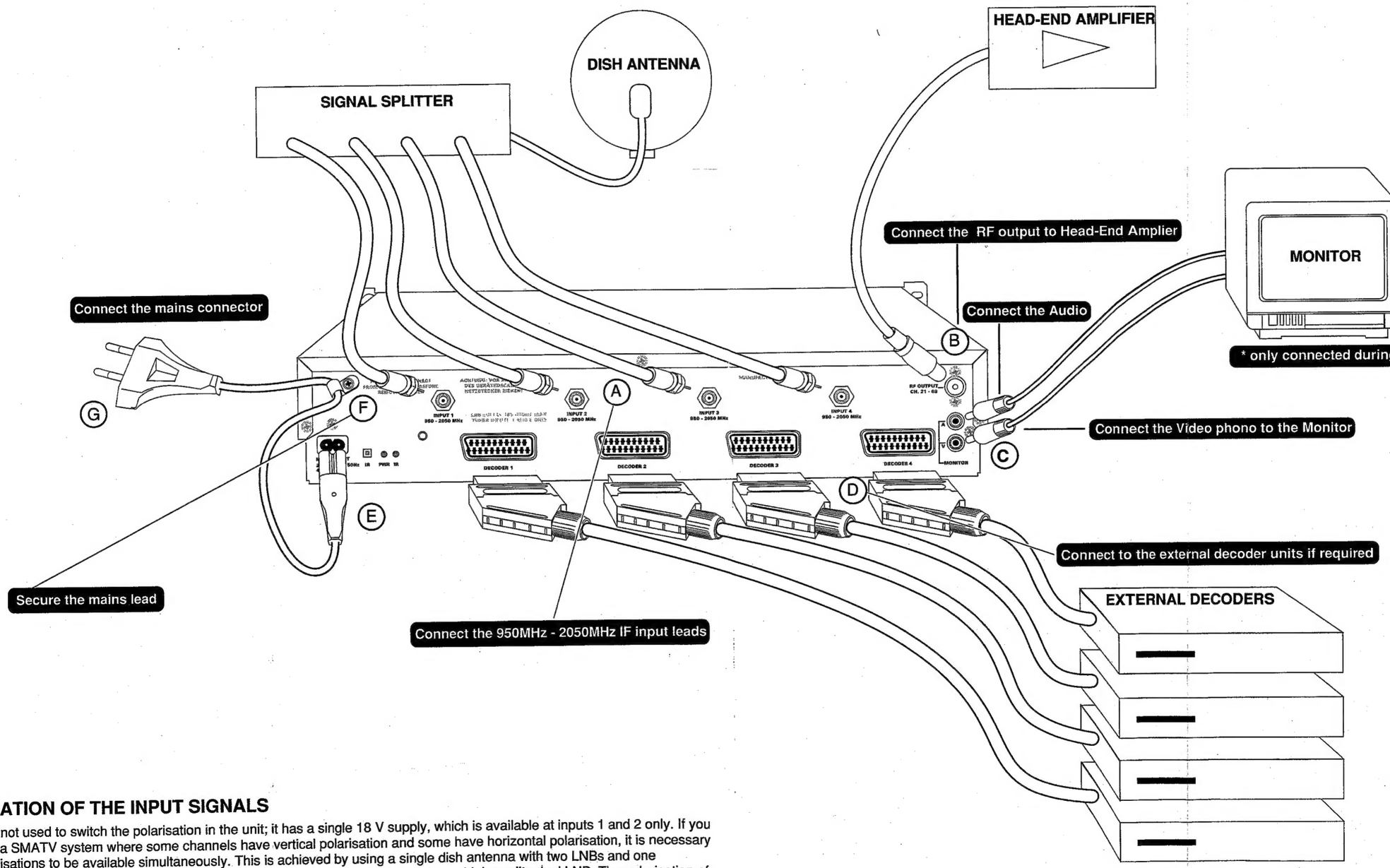
1. MAINS INPUT — IEC mains input connector.
2. IR — On/Off toggle for Infra Red control.
3. PWR — Power is on when green LED illuminated.
4. IR — IR control is enabled when green LED is illuminated; LED blinks when IR beam is being received.
5. IR sensor window.
6. DECODER 1 to 4 — SCART connectors for connecting external decoders to the SMATV unit.
7. V MONITOR — Video phono connector for connecting to a monitor.
8. A MONITOR — Audio phono connector for connecting to a monitor.
9. Screw for attaching mains lead to P-clip.
10. INPUT 1 to 4 — F-type connectors for LNB inputs to tuners, only INPUT 1 and INPUT 2 have 18V power on them.
11. RF OUTPUT — IEC connector for RF output to the communal system.
12. Connection lugs for securing the unit to either wall or rack mounting facility.

CONNECTING UP THE UNIT

WARNING: Do not power up the unit until all the cables have been connected.

SUGGESTED ORDER OF CONNECTING UP TO THE PERIPHERAL UNITS OF THE COMMUNAL SYSTEM

Ⓐ → Ⓑ → Ⓒ → Ⓓ → Ⓔ → Ⓕ → Ⓖ

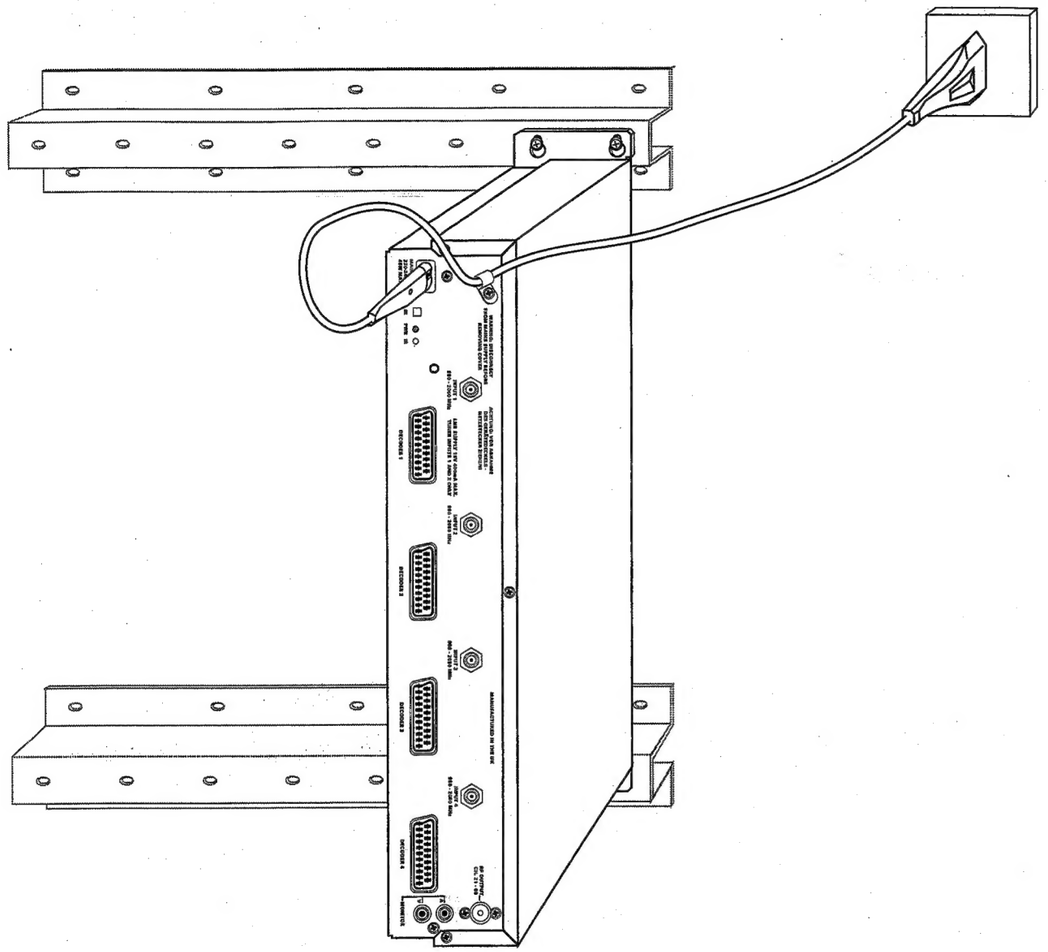


POLARISATION OF THE INPUT SIGNALS

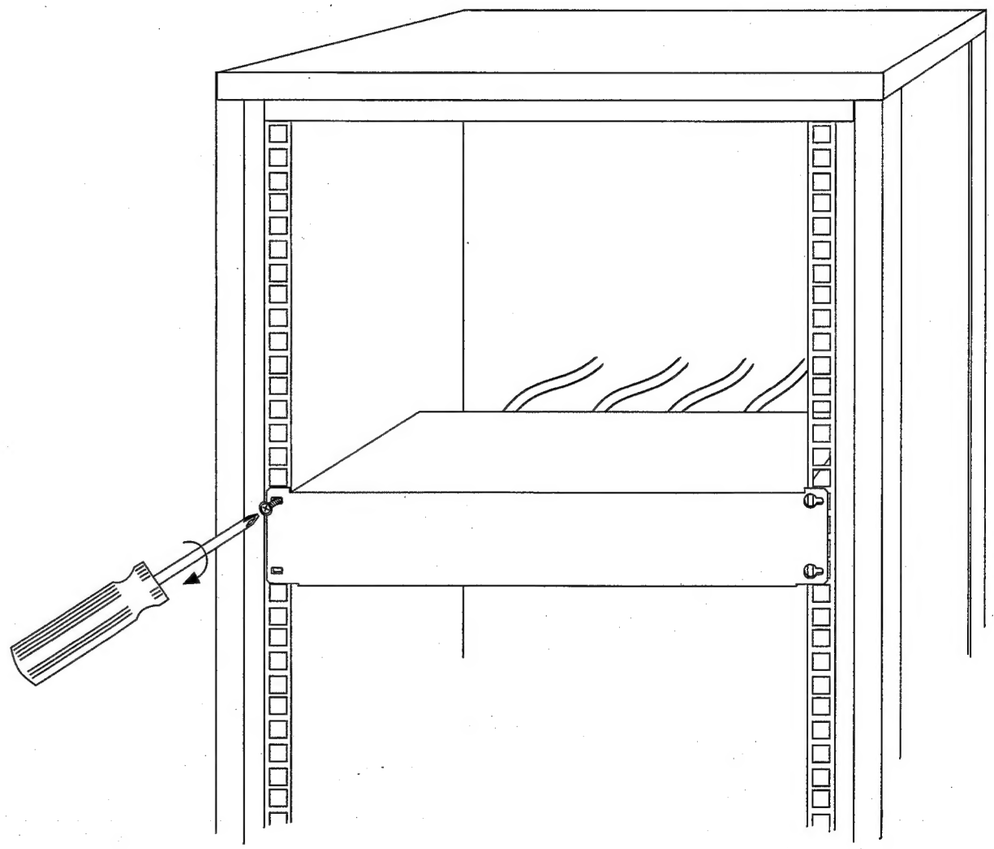
As voltage is not used to switch the polarisation in the unit; it has a single 18 V supply, which is available at inputs 1 and 2 only. If you are installing a SMATV system where some channels have vertical polarisation and some have horizontal polarisation, it is necessary for both polarisations to be available simultaneously. This is achieved by using a single dish antenna with two LNBs and one orthomode transducer (which accurately splits the horizontal and vertical polarisations) or a high quality dual LNB. The polarisation of the signal into each of the 4 inputs is chosen by connecting the appropriate cable from the signal splitters.

NOTE: *For a less flexible system you could use two 2-way splitters, in which case two inputs would be for vertically polarised channels and two for horizontally polarised channels.*

WALL MOUNTING DIAGRAM

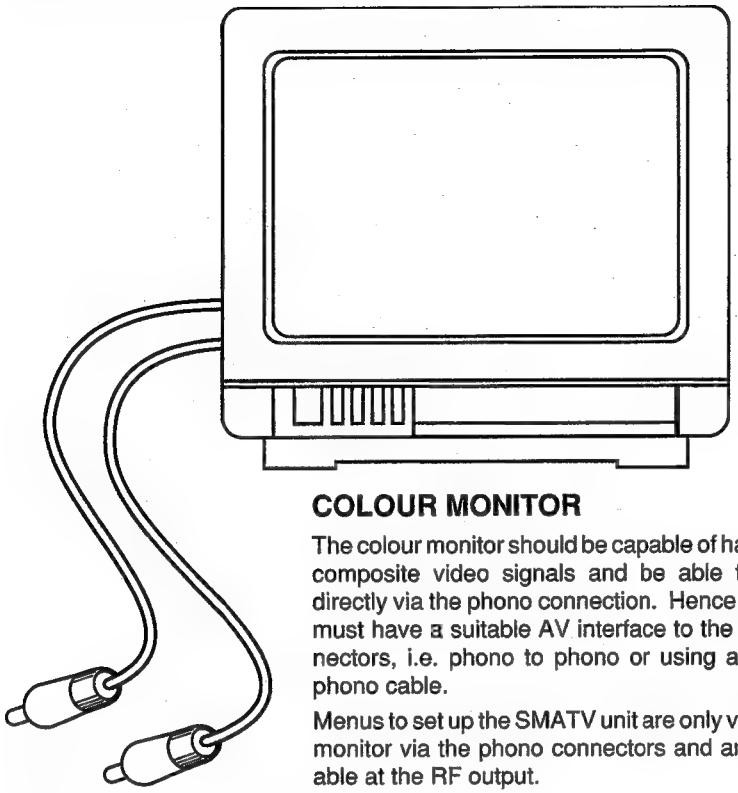


RACK MOUNTING DIAGRAM



NOTE: *Leave 1U (44.45 mm) of space between rack-mounted units.*

EQUIPMENT REQUIRED TO SET UP THE SMATV UNIT



COLOUR MONITOR

The colour monitor should be capable of handling PAL composite video signals and be able to interface directly via the phono connection. Hence the monitor must have a suitable AV interface to the phono connectors, i.e. phono to phono or using a SCART to phono cable.

Menus to set up the SMATV unit are only visible on the monitor via the phono connectors and are not available at the RF output.

HANDSET OVERVIEW

The handset has a protective film on its top surface, around the keys. You can peel this off, if you wish. All operational keys are shaded grey in the diagram opposite.

The handset works by sending an infra-red beam to your SMATV unit, therefore be sure to point it towards the infra-red receiver window located on the rear of the SMATV unit. See item 5 of the external component identification diagram page 8.

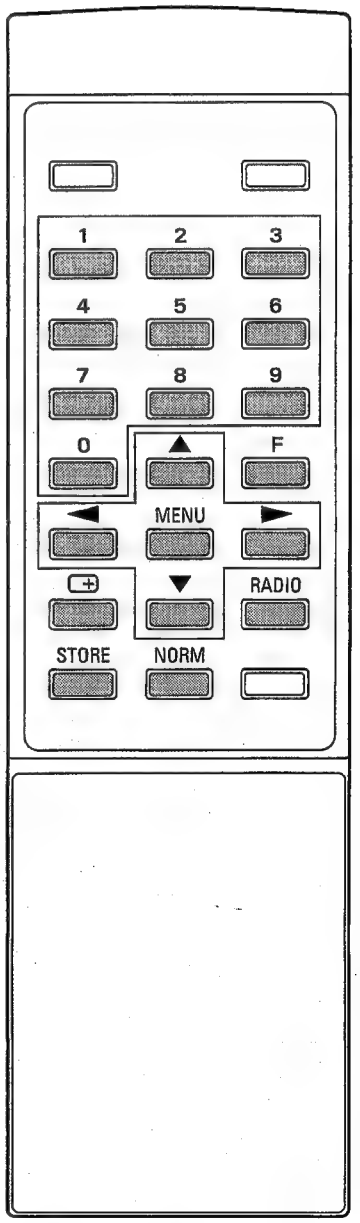
Do not place any objects in infra-red beams path which may inadvertently block the beam between the infra-red window and the handset. For the user to operate the handset the 'IR' enable toggle switch located on the rear of the unit must first be pressed, resulting in the 'IR' status LED becoming illuminated. When the handset keys are operated the 'IR' status LED blinks, acknowledging that the beam of infra-red data is been received.

If the user does not operate the handset keyboard within a given time period the unit times out and the 'IR' status LED will extinguish. If this happens then the 'IR' enable toggle switch will require pressing once again.

On completing the handset setting up operations, the 'IR' toggle switch can be pressed resulting in the infra-red sensor being deactivated and the 'IR' status LED will become extinguished.

Keys Used in Menus

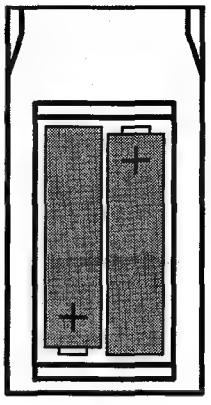
MENU key:	used to enter the Main Menu, i.e. display it on the monitor screen; can be used to move back to the previous menu in the menu structure
0 - 9 keys:	used to move down to the next menu in the menu structure; used to select an option in the menu; used to enter the PIN.
▲ key:	used to move up through the options within a menu
▼ key:	used to move down through the options within a menu
◄ and ► keys:	used to select the values of each option in the menus;
F key:	used to start certain actions in the menus
⊡ key:	this is the status key, which, in menus, is used to display the channel status on screen for 5 seconds.



NORM key: used to leave a menu without storing any of the information you may have just altered in that menu; the receiver returns to normal viewing mode

STORE key: used to store information you have just altered in a menu, so that this information becomes valid, and will be visible when that menu is re-entered

NOTE: The ▲, ▼, ◄ and ► keys all cause a "wrap" (e.g. pressing the ▼ key at the last option in a menu will select the first option, or if the possible values are 1, 2 and 3, and you keep pressing the ►key, 1, 2, 3, 1, 2....etc will be displayed).



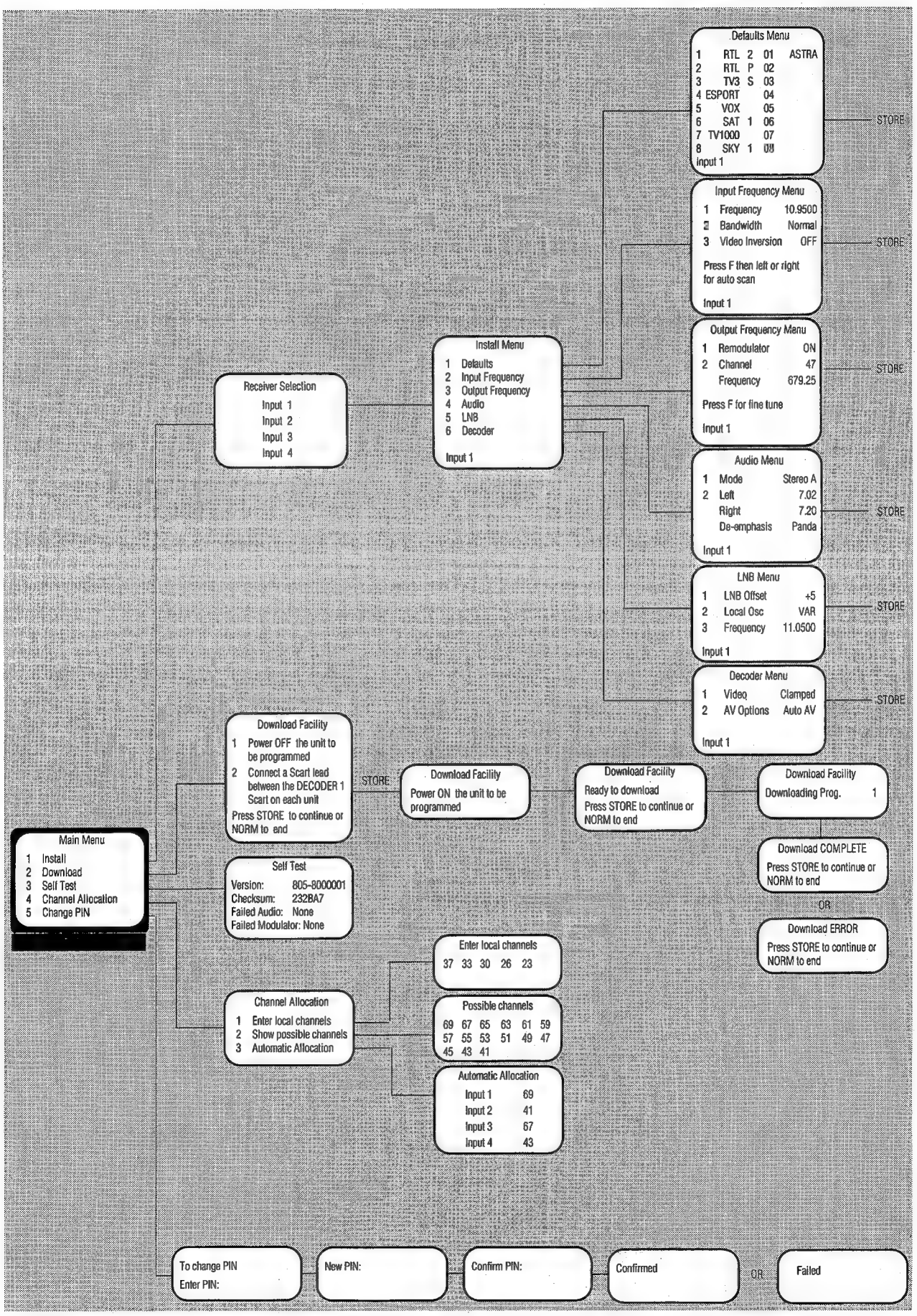
Changing the Batteries

The handset runs from two AA batteries located under a cover on the underside of the handset. These batteries will need replacing from time to time. You should do this as soon as the handset fails to operate the SMATV unit from the normal testing distance.

Pressing down slightly on the ridged part of the battery cover, slide the cover in the direction marked ▼ OPEN. Remove the old batteries and put in the new ones in the orientation shown in the figure. Slide the cover back into position.

NOTE: Never leave flat batteries in the handset, as they may leak and corrode the metal contacts.

SMATV MENU STRUCTURE



SUMMARY OF MENU VALUES

IMPORTANT:

- The Main Menu is used for progressing into the menu structure. From this menu you can open up various sub-menus, all of which are concerned with setting up individual functions on the SMATV unit.
- You will need to use the Channel Allocation Menu to tune in the desired satellite channels to UHF channels around the terrestrial channels previously tuned in.
- If you leave any of these menus by pressing the MENU key (so that you stay in the menu structure), any information you have changed at the menus will not necessarily be lost. It can be stored when the STORE key is pressed in a different menu.
- Press the STORE key to store these settings.

The functions of the SMATV unit are set up using on-screen menus which are contained in a menu structure spreading out from a Main Menu. As previously described the user is required to press the 'IR' enable toggle switch before being able to operate the handset, this results in the 'IR' status LED becoming illuminated. Where multiple units are being used, only activate the 'IR' enable toggle switch of the unit being set up. Toggling the 'IR' switch results in the Enter PIN message appearing on the monitor screen as shown right.

Entering the correct PIN number allocated to the unit results in the Main Menu appearing on the screen as shown right. If, however, the incorrect PIN number is keyed in then a message Invalid Pin will appear on the screen and the process will require repeating from start. For users that have forgotten their PIN number a factory default PIN = 1234 is made available.

Main Menu :-

Install Menu Option : Pressing key '1' of the handset results in Receiver Selection sub-menu appearing on the screen as shown right.

Receiver Selection :-

Input 1 to Input 4 : Represents the four receivers within a single SMATV unit. Pressing the desired numeric key enables the operator to set up that particular receiver via the Install Menu that appears.

Install Menu :-

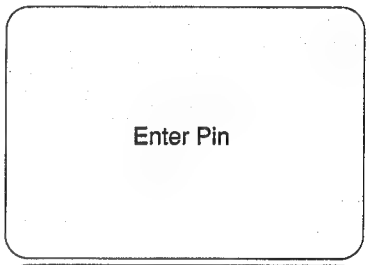
Defaults Menu : There are eight possible choices displayed on the menu at one time, the specific choice for the receiver being set up can be made using the numeric keys 1 - 8.

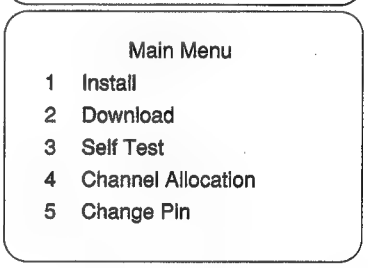
If the programme channel required is not available a further selection of programme channels can be made possible by pressing the ▲ or ▼ keys. Pressing the STORE key will save the desired programme channel.

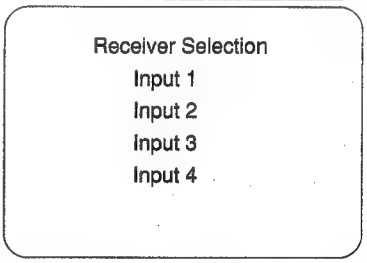
Input Frequency Menu : Used when setting up the receiver to a known programme channel not in the default listing and if specific enhancements to the bandwidth or video inversion on C-Band transmissions are required.

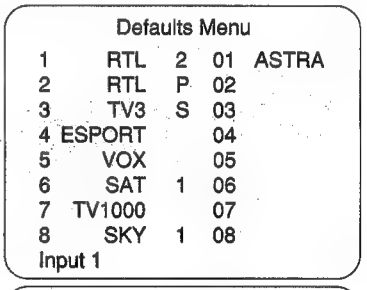
Option 1: Results in the 'Frequency' value (in GHz) flashing. If the desired value is below or above the displayed value then press the ◄ ► key respectively until the correct value appears. If preferred use the numeric keys to put in the known programme channel frequency value.

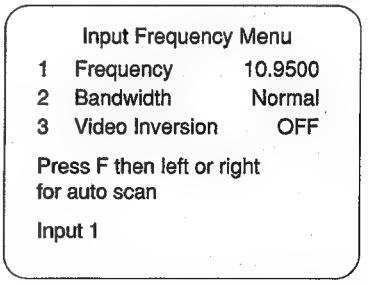
Alternatively by pressing the F and the ◄ ► key the 'auto-scan' facility can be initiated. This results in a decrease or increase in frequency in 500kHz steps taking place until the desired frequency is found, to stop the scan press the Menu key. If necessary, fine tuning can be obtained by pressing the ◄ ► key.











Option 2 : Results in the 'Bandwidth' value flashing. Press the ◄► key respectively until the desired value appears. The options of bandwidth available depends on the type of tuner fitted to the SMATV unit. e.g. NORMAL (27MHz) and NARROW (18MHz), NORMAL and WIDE (36MHz) or just NORMAL. Setting the narrower of the two option values available may reduce sparklies.

Option 3 : Results in the 'Video Inversion' value flashing. Generally this option should be OFF (the default value). Some bands have inverse video (e.g. C-Band) where this is the case the option should be ON.

Press the ◄ ► key respectively until the desired requirement of ON or OFF is selected.

(If CBAND is set in the LNB Menu, this video inversion option will automatically set itself to ON.)

Pressing the STORE key will save the desired settings.

Output Frequency Menu : Basically this option allows the user to control whether the modulator is in circuit or out of circuit. Hence, if only 3 out of 4 channels were required then the modulator not required could be switched off thereby reducing the chance of interference to the 3 desired channels.

Option 1: Remodulator — used to allow/prevent the signal from the receiver to reach the RF output by switching the Modulator ON/OFF respectively.

Option 2: Channel — used to decrease or increase the channel selection in single steps. Press the ◄ or► key respectively to step through the range of channel values 21 – 69.

Frequency — used to decrease or increase the frequency in 8MHz steps. Press the ◄► key respectively to step through the range of output frequency values 471.25 – 855.25MHz.

Output Frequency Menu

1	Remodulator	ON
2	Channel	47
	Frequency	679.25

Press F for fine tune

Input 1

Audio Menu : Used to set the audio reception to the appropriate subcarrier for the desired programme channel being set up.

Option 1: Mode — Available values are Mono 1 - 9 and Stereo A - D. Note however, Audio modes Stereo A to Stereo D are received in stereo and then the left and right audio channels are added together to give a mono output. A full list of default values is shown below.

Press the ◄► keys to step through the default modes.

Option 2: Left and Right — Available values are 5.00 - 9.00 (MHz). This is used to customise the frequency (this gives Mono V (V for variable) and Stereo V at option 1). Press the ◄► keys to step through in 10kHz steps or the numeric keys for direct entry.

Option 3: De-emphasis — this option is only available as a variable to be set up as desired in Mono mode, i.e. 50µs or J17.

In Stereo mode the de-emphasis changes automatically to being part of Option 2 and becomes a fixed value, i.e. Panda.

Audio Menu

1	Mode	Stereo A
2	Left	7.02
	Right	7.20
	De-emphasis	Panda

Input 1

In any menu, pressing the RADIO key will allow you to step through the default modes. These modes are shown in the following list. Some of the modes are satellite radio channels; others provide TV commentary in different languages.

FSS

Stereo A	7,02 + 7,20 MHz	Panda 1
Stereo B	7,38 + 7,56 MHz	Panda 1
Stereo C	7,74 + 7,92 MHz	Panda 1
Stereo D	8,10 + 8,28 MHz	Panda 1
Mono 1	6,50 MHz	50µs
Mono 2	7,02 MHz	Panda 1
Mono 3	7,20 MHz	Panda 1
Mono 4	7,38 MHz	Panda 1
Mono 5	7,56 MHz	Panda 1
Mono 6	7,74 MHz	Panda 1
Mono 7	7,92 MHz	Panda 1
Mono 8	8,10 MHz	Panda 1
Mono 9	8,28 MHz	Panda 1

CBAND

Stereo A	5,58 + 5,76 MHz	Panda 1
Stereo B	5,94 + 6,12 MHz	Panda 1
Stereo C	6,30 + 6,48 MHz	Panda 1
Stereo D	6,66 + 6,84 MHz	Panda 1
Mono 1	6,60 MHz	50 µs
Mono 2	6,65 MHz	50 µs
Mono 3	6,80 MHz	50 µs
Mono 4	5,94 MHz	Panda 1
Mono 5	6,12 MHz	Panda 1
Mono 6	6,30 MHz	Panda 1
Mono 7	6,48 MHz	Panda 1
Mono 8	6,66 MHz	Panda 1
Mono 9	6,84 MHz	Panda 1

Pressing the STORE key will save the desired settings.

LNB Menu : This menu is used to correct for LNB local oscillator frequency variations if the desired programme channel is slightly off tune.

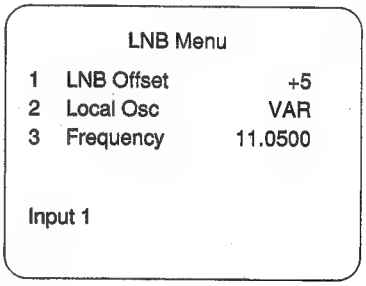
Option 1: LNB Offset — used to correct for variations in the LNB output frequency and therefore to make the picture as 'sparkly-free' as possible. Available values are -15 to +15 (MHz), the zero offset value (the default) = None.

Option 2 : Local Osc — Available values are FSS, DBS, T-COM, CBAND or VAR. Used to set the appropriate band for the LNB used. If incorrectly set, the frequency option in the Input Frequency Menu will show the wrong value for the satellite channel currently displayed.

Setting	Freq. Range (GHz)	Typical Satellite
FSS	10.9500 - 12.1000	Astra
DBS	11.7000 - 12.8500	TDF/TVSAT/HISPASAT
T-COM	12.4250 - 12.5750	
CBAND	3.0500 - 4.2000	

Option 3 : Frequency — Available values are 9.5000 to 19.0000 (GHz). VAR causes this third option to appear on the menu, where the LNB frequency can be customised using the numeric keys for direct entry of the frequency value (default = 9500)

Pressing the STORE key will save the desired settings.



Decoder Menu : This menu is used to software control external decoder AV signals that are required for the desired programme channel.

Option 1: Video — available values are Clamped or Unclamped. Clamped being filtered, clamped PAL (used with line cut and rotate scrambling systems e.g. VideoCrypt, Nagravision). Unclamped being raw baseband (used with MAC decoders and sync. suppression scrambling systems).

Option 2: AV Options — available values are Auto AV, Ext AV or Ext Video.

Auto AV = automatic loop-through to the receiver modulator prior to RF output; loop-through is enabled when the decoder asserts a voltage >6 V on pin 8 of the allied receivers DECODER SCART connector. i.e., DECODER 1 and Receiver 1 of the SMATV unit.

Ext AV = forced loop-through of video only.

If the setting is Ext AV or Ext Video there will be no TV picture if there is no attached decoder.

Pressing the STORE key will save the desired settings.

Pressing the MENU key repeatedly will return you to the Main Menu.

Decoder Menu

1 Video Clamped
2 AV Options Auto AV

Input 1

IMPORTANT OPERATIONS

Main Menu :-

Download : Pressing key '2' of the handset results in the Download Facility sub-menu appearing on the screen as shown right.

NOTE: *The downloading procedure can only be carried out by connecting the host receiver Decoder 1 SCART to the guest receiver Decoder 1 SCART.*

Download Facility

1 Power OFF the unit to be programmed
2 Connect a Scart lead between the DECODER 1 Scart on each unit

Press STORE to continue or NORM to end

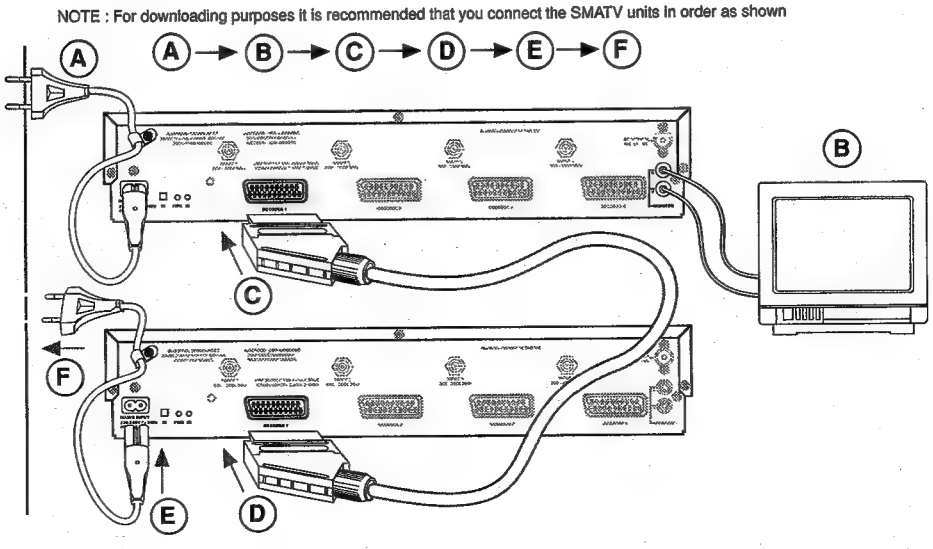
Download Facility :-

Option 1 & 2 : This menu is used to transfer the software information from one SMATV unit to other units in a multiple system. The connections between the units is shown below, refer to the Installation Manual for further information if required.

Pressing the NORM key will end the downloading when the Download COMPLETE message appears.

Pressing the MENU key repeatedly will return you to the Main Menu.

NOTE : For downloading purposes it is recommended that you connect the SMATV units in order as shown



Main Menu :-

Self Test : Pressing key '3' of the handset results in the Self Test sub-menu appearing on the screen as shown right.

Self Test Menu : The messages on the screen indicate:-

— the version of software used.

— checks the bytes used in hexadecimal indicating, if incorrect, EEPROM failure.

Further tests are whether any faults are apparent in the audio and modulator circuits of all four receivers. This is in brief is done by the Microprocessor using interrogating and response techniques (handshaking) between the audio circuit processors and the modulator circuit processors.

Pressing the MENU key will return you to the Main Menu.

Self Test
Version: 805-8000001
Checksum: 232BA7
Failed Audio: None
Failed Modulator: None

Main Menu :-

Channel Allocation : Pressing key '4' of the handset results in the Channel Allocation sub-menu appearing on the screen as shown right.

Channel Allocation : Although there are 49 channels in the range 21 to 69, in practice some of them cannot be used because of interference. e.g. if N is the channel number, you cannot use:

Channel Number	Reason
N + 1 or N - 1	the unit uses a double sideband system.
N + 5 or N - 5	there may be interference from the TV's local oscillator.
N + 9	this may cause image interference on TV sets.

By typing in the channel numbers used for terrestrial TV in your local area, you can use the Channel Allocation Menu to calculate which channel numbers are appropriate to allocate to the SMATV channels.

You can also use the menu to allocate automatically four of the "free" channel numbers to the four receivers. These will become the default channel numbers in the Output Frequency Menu for each receiver. You can still override this default setting by changing the channel number at the Output Frequency Menu. If you set a channel number which conflicts with the channel restriction rules, there will be an on-screen warning when you leave this menu, which you can override if you wish.

The example menus show 4 terrestrial channels on channel numbers 23, 26, 30 and 33 and the VCR on channel 37. Note that in your area there may well be more than four channels occupied by terrestrial broadcasts.

Option 1: Enter local channels — enter the channel numbers occupied by the local terrestrial TV channels. Enter a channel number for a VCR (if required). To edit list, use the ◄ or ► keys to move between channels. To delete a channel, change number to 00.

Pressing the STORE key will save the desired settings.

Option 2: Possible channels — channels that are not used already by the system ("Free") are displayed for your information.

Pressing the MENU key or the NORM key will return you to normal viewing mode.

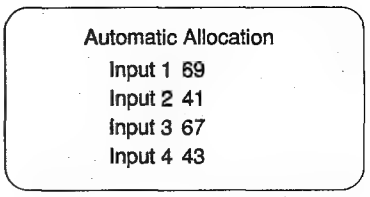
Channel Allocation
1 Enter local channels
2 Show possible channels
3 Automatic Allocation

Enter local channels
37 33 30 26 23

Possible channels
69 67 65 63 61 59
57 55 53 51 49 47
45 43 41

Option 3: *Automatic allocation — Four of the free channels that have been allocated to the receivers are displayed here. To confirm this allocation and return to normal viewing mode press the STORE key.*

Pressing the MENU key repeatedly will return you to the Main Menu.



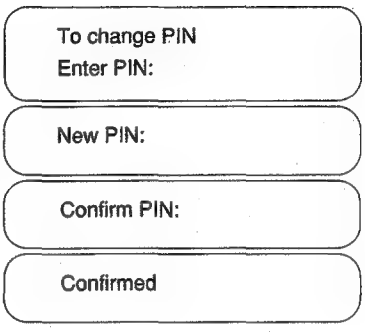
Main Menu :-

Change PIN : Pressing key '5' of the handset results in the 'To change PIN' sub-menu appearing on the screen as shown right.

Self Test Menu : Follow the messages on the screen to change PIN. (The default factory PIN number is 1234.)

Pressing the STORE key will save the PIN settings.

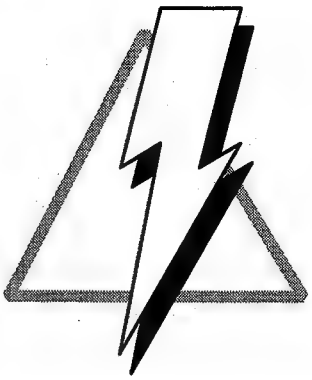
On completion press the MENU key repeatedly, this return you to the Main Menu.



Resetting the Default PIN :-

To reset : Hold down the IR enable toggle switch whilst powering up the unit.

HANDLING ELECTROSTATIC SENSITIVE (ES) DEVICES



Many semiconductor devices, such as integrated circuits and field effect transistors, can easily be damaged by static electricity. The following precautions should be observed when ES devices are being handled.

- Always use a grounded tip soldering iron and anti-static type solder removal devices.
- Before handling a device, discharge any electrostatic charge on your body by touching a known earth point - preferably use an earthed bench mat or ground mat together with a wrist strap.
- Do not remove an ES device from its protective packing until you are ready to fit it. Touch the protective material to the chassis or the assembly in which the ES device is to be installed, before removing the device from its packing.

WORKING WITH CHIP COMPONENTS

General Precautions for Handling and Storing Chips

Do not handle chips with your bare hands as this can cause oxidation on the chip's terminals which leads to poor soldering.

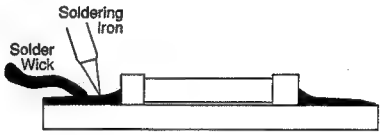
Do not store the chips in any of the following areas, as oxidation will occur and the capacitance and resistance will be affected:

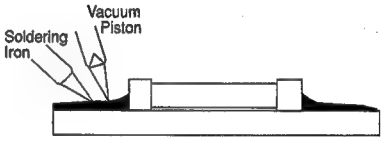
- areas with sulphur or chlorine gas.
- direct sunlight.
- areas of high temperature and/or high humidity.

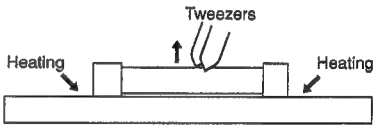
Rough handling of circuit boards containing surface mount devices can cause damage to the components as well as the board; never bend or flex such boards.

Do not heat or cool the boards unnecessarily, as the board materials expand and contract by differing amounts which can cause the components and solder connections to be stressed.

Never rub or scrape chip components as this can change their value. Do not slide the board across any surface.







General Precautions for Attaching and Removing Chips

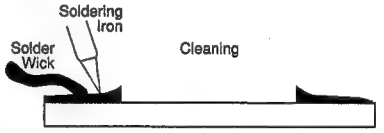
When using a soldering iron, take care and apply suitable pressure.

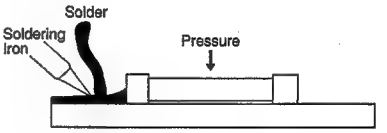
For preference, use a soldering iron rated at approx. 30 W with a thermostatic control to give soldering temperatures of approx. 225 to 250 °C.

Do not re-use chips which have been removed from the board.

When attaching chips, solder as quickly as possible so as not to damage the terminals and body of the chip. Do not touch the terminals directly with the soldering iron.

While soldering, keep the chip's body in contact with the board.





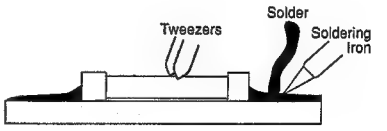
Removing a Chip

Heat the solder for 2 to 3 seconds at each terminal of the chip.

Remove the molten solder with solder wick.

Holding the chip with a pair of tweezers, remove it gently from the board while the solder at each terminal is molten.

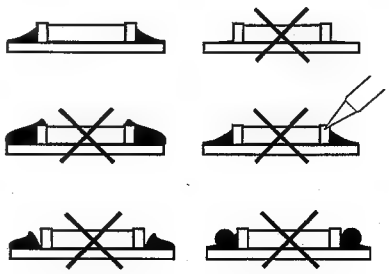
Wick off all excess solder from the board, so that it is ready for the mounting of new components.



Attaching a Chip

Place the chip in the correct position and temporarily solder one terminal to the copper surface.

Holding the chip body with a pair of tweezers to position it accurately, complete the soldering at each terminal in turn.



GAINING ACCESS TO THE UNIT

REMEMBER - SAFETY FIRST

WARNING: always disconnect the unit from the mains supply before dismantling it.

WARNING: remove your wrist strap before applying power to the re-assembled equipment to avoid potential shock hazards.

WARNING: The incorrect substitution of electrolytic capacitors may result in an explosion hazard.

CAUTION: work on an earth mat and wear a wrist strap and earth lead to prevent electrostatic damage to the components. Once the main board is removed from the casing it is fairly flexible, so handle it carefully to avoid damaging the components.

CAUTION: You must replace all the PCB fixings, screws etc. when the unit is re-assembled, otherwise there could be hazards due to reduced clearances.

CAUTION: Before you apply mains power to the unit, always ensure that the voltage rating stated on the rear panel of the unit matches the mains voltage supply in the country of installation.

CAUTION: Do not spray any chemicals on or near the unit.

CAUTION: Replacements for faulty components must be of the correct value and rating and must be assembled by a competent engineer, otherwise safety approvals could be invalidated.

Removing the Cover

Disconnect the unit from the mains. Unscrew the fixing screw (C) from the P-clip surrounding the mains cable, remove the mains cable away from the unit.

Remove the 9 taptite screws (A). Three are at the rear of the unit and one is in each side, a further four are located on the top (see Figure 1).

Hold both sides of the cover and slide it towards the rear of the unit to remove it.

Removing the Modulator Board

Refer to Figure 2. Remove all connectors from Modulator PCB.

Whilst lifting the edge of the modulator PCB, crimp together the stand-off prongs (F) using tweezers to free the PCB.
Gently slide the PCB away from the side panel to remove it from the unit.

Removing the Main PCB

Refer to Figure 1. Remove the nuts (G) from the F-type connectors.
Remove the phono socket screw (B), mains socket screw (B).
Whilst lifting the front edge of the main PCB, crimp together the stand-off prongs (E) using tweezers to free the PCB.
Gently slide the PCB upwards above the (F) prongs and then away from the rear panel to remove it from the casing.

Re-assembling the Unit

Reverse the above procedures to re-assemble the unit. Screw the fixing screw (C) on the P-clip surrounding the mains cable and secure the cableto the unit.

Figure 1

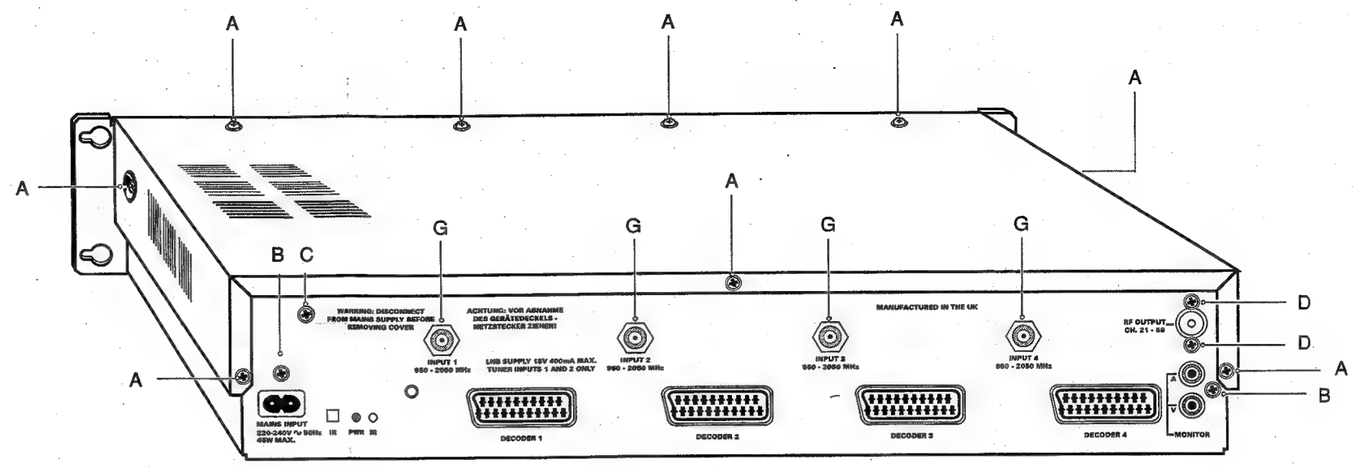
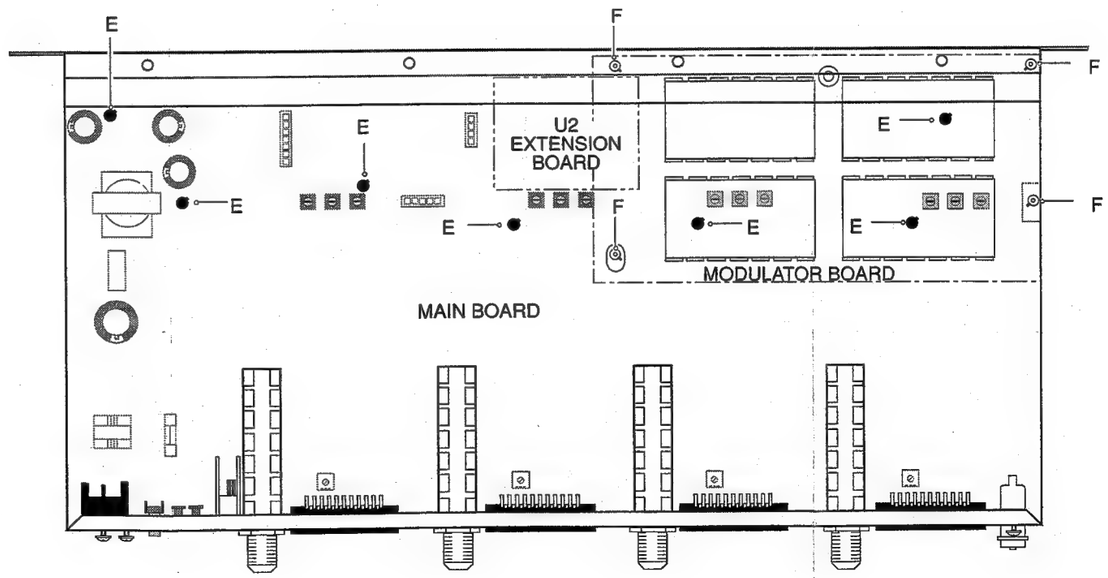
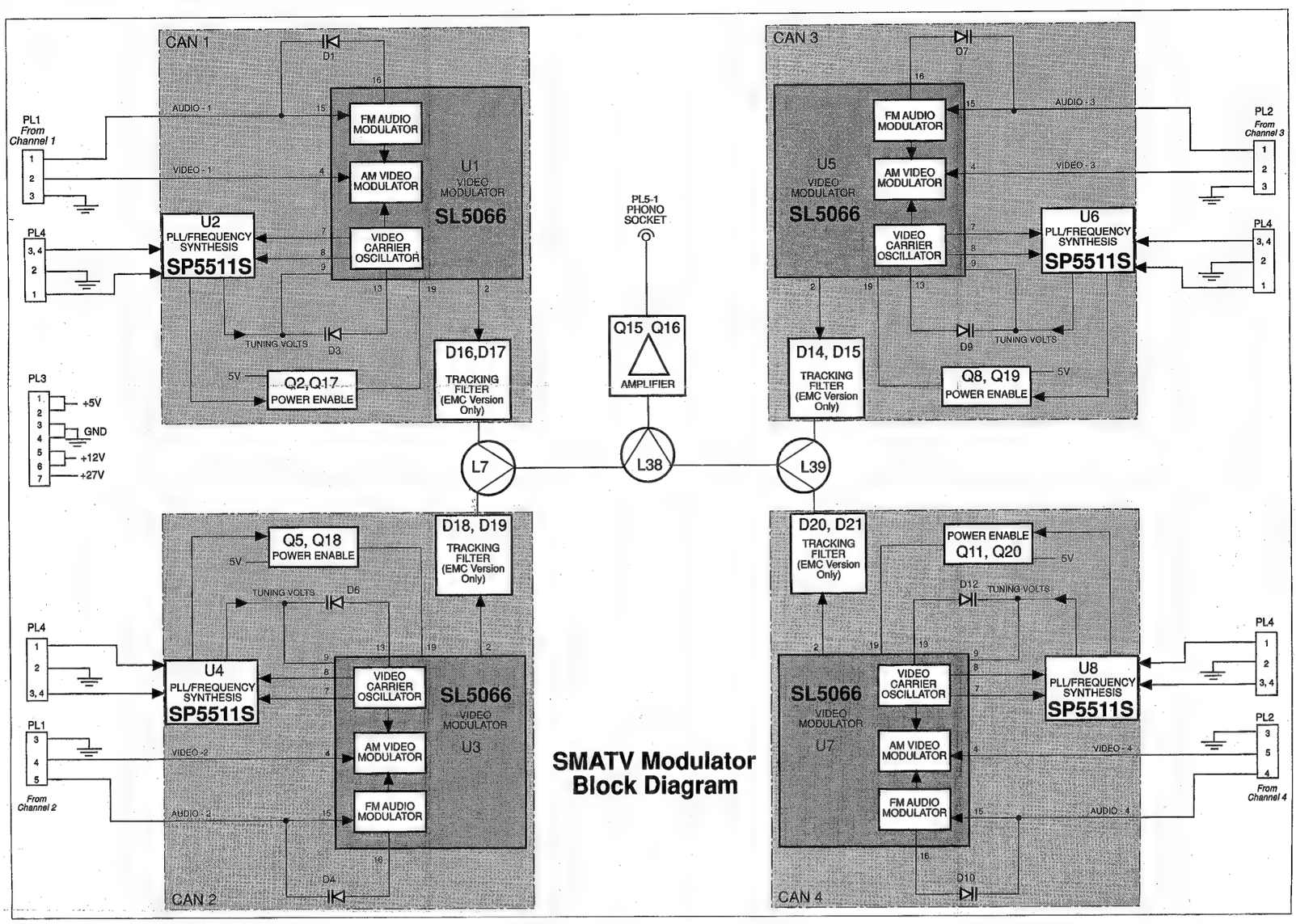
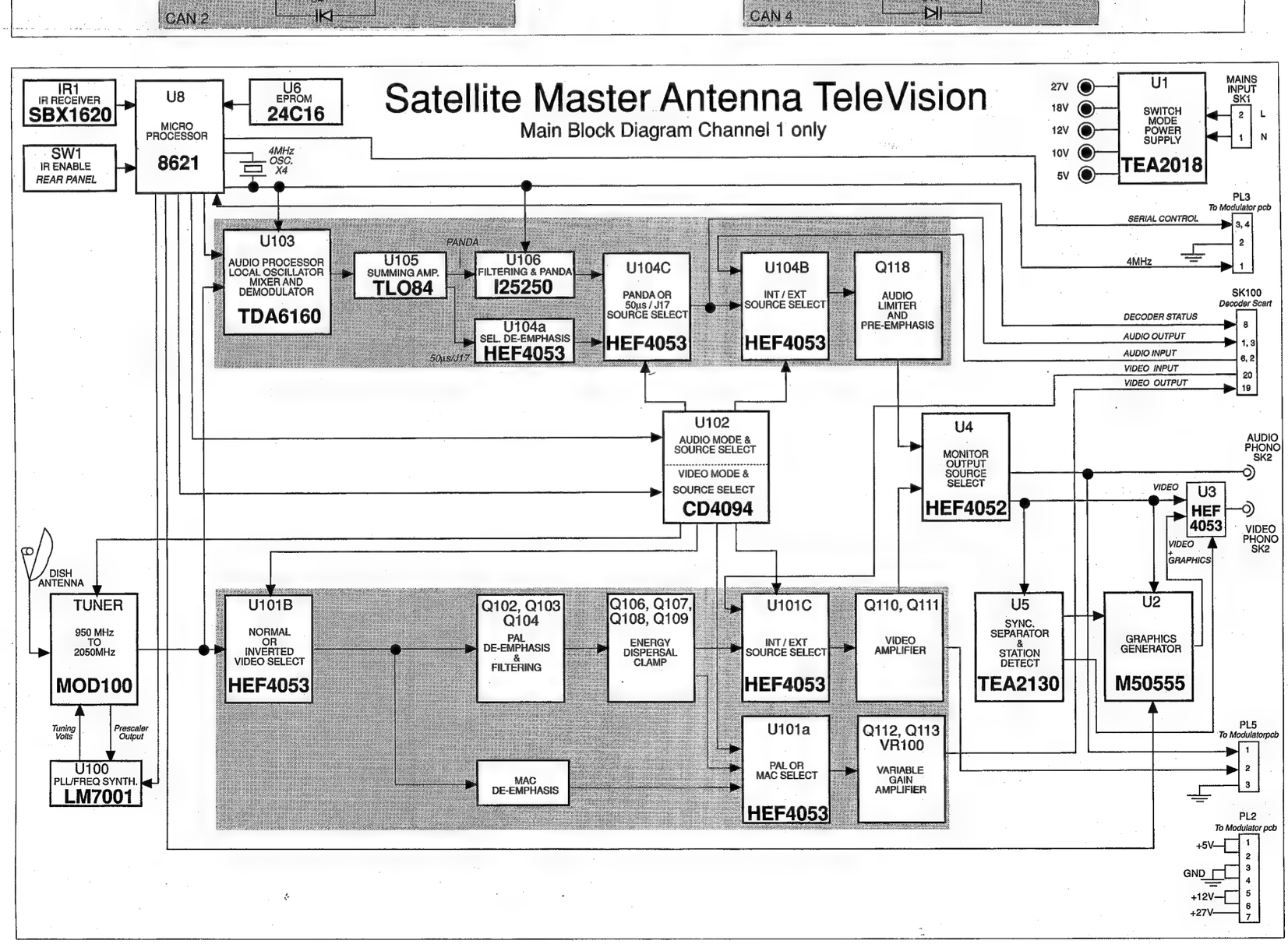


Figure 2



SMATV MODULATOR AND RECEIVER BLOCK DIAGRAMS





SMATV CIRCUIT DESCRIPTION

All of the component parts of the receiver are fitted on the main PCB and the Modulator PCB unless the receiver has a microprocessor extension fitted, in which case there is a separate daughter board (OTP) for this.

All of the functional blocks of receiver 1 and the modulator boards are shown on the two block diagrams shown on the previous page. The following motherboard description applies to receiver 1 only, however, all other receivers work exactly the same.

RECEIVER MOTHERBOARD

TUNER AND VIDEO PROCESSING

Tuner

Programme installation is selected via the handset. The infra-red enable button SW1 requires depressing after power up and a security password (PIN) is entered. Infra-red data from the handset is received by the sensor IR1. The TTL level data is fed to the microprocessor U8 (8621) for decoding. U8 interprets the information and when in the input frequency menu supplies tuning data to the PLL frequency synthesiser U100 (LM7001). This frequency synthesiser IC generates a tuning voltage which is fed to the tuner MOD100 on pin 15. The tuner's internal voltage controlled oscillator (VCO) which is 479.5 MHz higher in frequency than the chosen program is then mixed with the incoming satellite IF signal. The desired signal is then recovered by an IF stage centred at 479.5 MHz and having a bandwidth of 27 MHz. The PLL circuit is completed with a return prescaler output on pin 18 of the tuner MOD 100. This is the local oscillator frequency divided down by 64 and fed into pin 11 of the frequency synthesiser U100. The synthesiser (U100) divides down the prescaler input further according to the ratio given to it by the microprocessor U8 for the selected programme and compares it with a reference generated from the 5.625 MHz crystal (X100). Any frequency error is then used to generate the tuner control voltage via Q100 to pin 15 of MOD 100.

To compensate for LNB frequency conversion offsets, the synthesised frequency can be manually adjusted in the LNB install menu, thus ensuring the IF signal is tuned to the centre of the 479.5 MHz bandpass filter in the tuner.

The 479.5 MHz FM signal in the tuner is then demodulated giving an unfiltered, non-de-emphasised, unclamped composite video baseband signal (CVBS) on pin 13.

LNB supply voltage (18V) is provided on pin 5 of MOD 100 and MOD 200 only. The 5V rail is supplied on pin 12 for the tuner. For tuners with selectable bandwidths, (i.e. 27/18 MHz or 27/36 MHz) 0V on pin 14 of MOD 100 gives normal bandwidth (27MHz). The optional bandwidth is then software selectable via U102 and Q114 which set pin 14 'high' (5V).

Video Processing Circuitry

The baseband signal from pin 13 of the tuner is coupled to the baseband amplifier Q101 which provides both non-inverted and inverted action on the baseband signals (some CBAND transmissions have inverted video which requires inverting to make all the baseband signals the same polarity).

Normal or corrected CBAND video is selected via the switch U101B and controlled from U102 which receives I^2C bus commands from the microprocessor U8. Clamped or unclamped video can be selected from the EXT decoder menu.

In 'clamped' mode the video signal is PAL de-emphasised through R115, R119 and C112 and amplified by Q102 and Q103. The signal is then coupled to an emitter follower Q104 into a 5.5 MHz low pass filter comprising of L100, L101 and C113, C115 and C117. Q105 provides phase compensation for chroma - lumina delay induced by the low pass filter. Energy dispersal in the signal is then removed by Q106, Q107, Q108 and associated components. The clamped, filtered PAL de-emphasised video is then fed to modulator (PL5) CAN1 and monitor source select U4.

The video signal is also fed to the clamped or unclamped video select IC U101A via R533 which is under control of the microprocessor U8, via U102. Unclamped, unfiltered video is fed from Q102 and MAC de-emphasis is achieved with C181 and R199. The signal is then amplified by the variable gain amp Q112 and Q113 adjustable by the potentiometer VR100 and fed to the decoder SCART output for descrambling purposes.

Colour Graphics Generator

The graphics generator IC U2 and sync separator IC U5 are used to generate all the menus and associated characters. U5 takes video in from the source select IC U4 and provides line and frame synchronization signals for the graphics generator U2. Timing signals for U5 are derived from the external crystal resonator X2 operating at 503 kHz. This enables line and frame sync outputs even when no source video is present (useful in frequency scan mode).

U5 also provides a channel identification output which sets to 'high' when incoming video is phase locked. The channel identification signal is then used to latch a switch U3 which selects either graphics superimposed over incoming video or graphics over a blue background.

Associated with U2 are two oscillators. The crystal X1 generates a frequency of 17.734 MHz (4 times the frequency of the colour information) and is used to generate the colour background. The second oscillator is within U2 and is set by external components L4, C33 and C34 and is used to set the horizontal and vertical position of the on screen graphics.

Audio Frequency Circuitry

Audio processing IC U103 performs three functions, these being :-

- Mixer.
- Oscillator.
- Demodulator.

The baseband signal from the tuner MOD 100 is buffered to pin 24 of U103 via an emitter follower Q116 and C133. The desired audio sub-carriers are selected under control of U8 and are mixed with a local oscillator to a frequency of 10.52 MHz for a right channel of a stereo pair and 10.7 MHz for a left channel. Mono sub-carriers are also mixed to 10.7 MHz.

The local oscillator is set by external components D103, L108 and C148 and its frequency varied by a tuning voltage from pins 2 and 3, under control of the microprocessor U8. U103 provides 2 IF outputs:-

- IF 1 is provided on pin 22, buffered by Q119 and filtered respectively by 2 sets of 10.7 MHz and 10.52 MHz narrowband filters for left and right carriers.
- IF 2 on pin 21 provides the selectable Mono wideband carriers, filtering is by a single filter centred at 10.7 MHz.

The filtered signals are then fed back into U103 via pins 15, 17 and 19 and demodulated internally. The FM discrimination slopes are factory set by adjustment of L105, L106 and L107 such that the DC bias is set to 2.4V on each of the audio output pins 8, 11 and 14 respectively.

U103 audio outputs go to a high impedance state when not selected. The selected audio is amplified by U105D and fed directly to the audio expander IC U106 and a 50µS/J17 de-emphasis selection IC U104. R-C network R182, C167 and C168 set the J17 frequency response. The audio signal is then passed through U105B which exhibits amplification and 75µS de-emphasis.

The audio signal then passes into a limiter circuit consisting of D104, D105, Q118 and associated components. This prevents wide deviation signals from some satellites from over deviating the audio modulator and possibly causing sound on vision patterning. Q118 also provides the necessary audio amplification to set the audio level to the same as terrestrial transmissions. R194 and retrofitted capacitor C185 apply pre-emphasis to the audio prior to remodulating the signal at standard terrestrial transmission frequencies.

The audio is also fed to U4, the audio monitor selector switch to provide an audio output via phono connection to a monitor during setting up of the SMATV unit.

CONTROL CIRCUITRY

The main component in the control circuitry is U8 which is based on the Z8 microprocessor. Ultimately, receivers will contain U8 as a custom-masked single component. These take several weeks to produce, therefore in some receiver units, in place of U8, there is a small U8 extension PCB (One Time Programmable - OTP Board) comprising a standard microprocessor and separate EPROM. This is described below.

When the U8 custom IC is fitted, the OTP Board is removed.

U8 performs the following functions:

- It detects and decodes the codes received via the IR beam from the handset and from the front panel buttons.
- It generates the control signals for the on-screen graphics.
- It controls the frequency synthesis loops for the tuner and for the UHF modulator.
- It controls the routing of the video and audio signals.

U6 is an E²PROM which is used to store information which is set at the on-screen menus.

U9 is a buffer which limits the current at the ports of U8.

The above functions are controlled by U8, which runs with a 4 MHz clock generated by crystal X1.

U8 Extension PCB (OTP Board)

This is inserted in the place of U8. When it is in position, the main PCB no longer contains the 4 MHz crystal X1 and capacitors C32 and C33. These three components are, instead, assembled on the U8 extension PCB (although note that the capacitors are renamed as C5 and C6 respectively when they are moved, and their values change to compensate for the move to 33pf and 39pf).

The board contains the following additional components: two capacitors (C3 and C4) and three ICs (U1, U3 and U4). U1 is a standard microprocessor, U3 is some TTL logic and U4 is an EPROM. (Note that components C3, C4, C5, C6, U1, U3 and U4 on this small PCB are quite different from the components with these circuit references which are on the main PCB, only X1 is the same.)

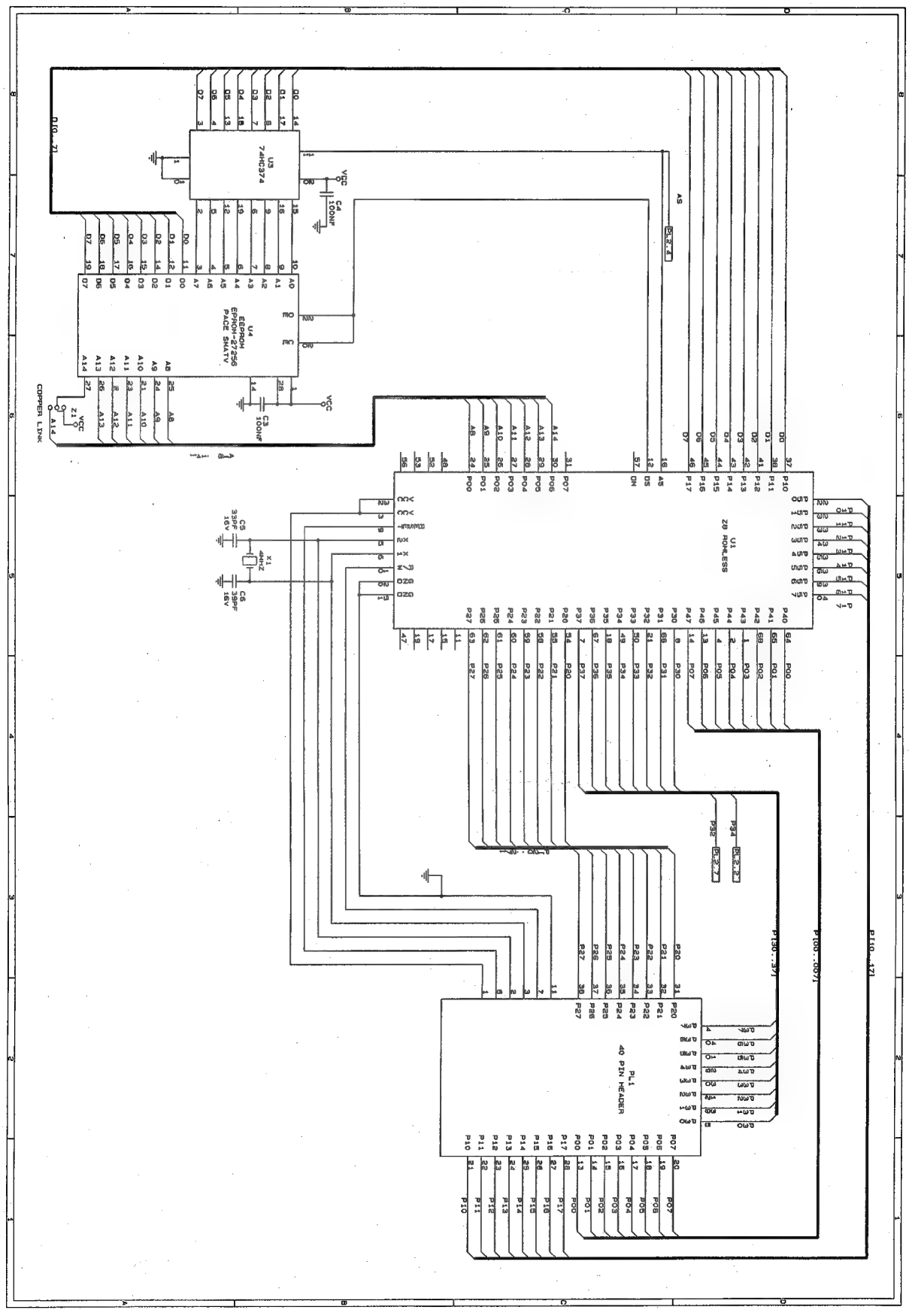
A circuit diagram and PCB diagram for the U8 extension board given opposite.

Replacement of the U8 Extension PCB by U8 Microprocessor

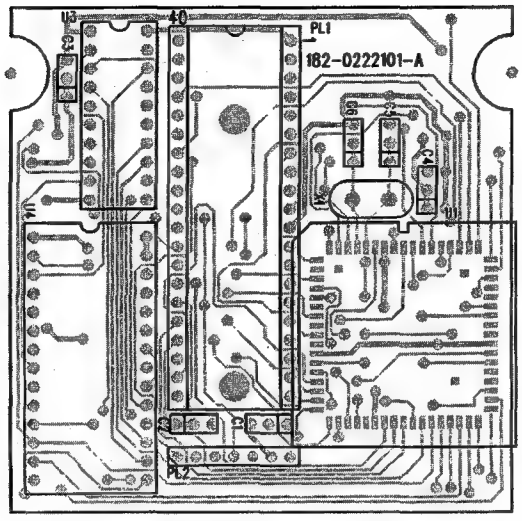
When the custom-masked IC U8 becomes available, the U8 extension PCB assembly will be replaced by the 40-pin integrated circuit U8, which fits directly onto the main PCB.

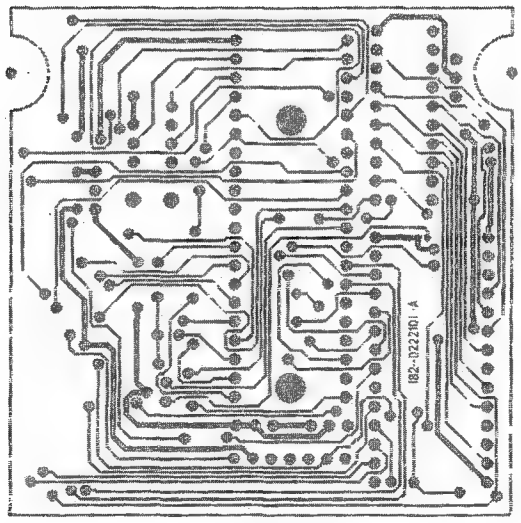
At the same time that U8 is mounted, crystal X1 will need to move back onto the main PCB, and the capacitors C32 and C33 refitted.

U8 EXTENSION (OTP BOARD) CIRCUIT DIAGRAM



U8 EXTENSION PCB (OTP BOARD)





SWITCH MODE POWER SUPPLY

Mains Input and Rectification

Diodes D1, D2, D3 and D4 rectify the ac mains voltage and, together with smoothing capacitor C2, provide the dc input HT for the SMPS. C1 and T1 form a mains filter to minimise the feedback of RFI into the mains supply. Asymmetrical mains pollution is reduced by the insertion of R19 and C9 between the primary ground and the secondary chassis ground. These components are required to satisfy the mains isolation requirements. They are also safety-critical components of the correct type.

SMPS Controller U1

The start-up supply for U1 (TEA2018) is obtained via R2 which charges C5 to approximately 6 V before U1 will power up. C5 sustains a charge long enough for the switch mode to reach its operating frequency. The supply for U1 is subsequently obtained from a feedback winding of the transformer T2, rectified by D7.

The frequency of the switch mode is set by R12 and C4 and should be 25 to 30 kHz.

Regulation is via the feedback winding which is rectified by D8 and set by R10, R11 and R8 to give a voltage of 2.4 V at pin 8 of U1 when the supplies are at their specified voltages (5 V, 12 V etc.).

The switching transistor for the switch mode, Q1, is driven directly from U1. A negative supply is generated across D10 which is switched through U1 from pin 4 to pin 5 thereby switching Q1 off. Excess energy from the switching of Q1 is dissipated in a snubber network R4, D5, D6 and C3. Overcurrent protection is implemented by sampling the current through Q1 with R6 and feeding the resulting voltage to pin 3 of U1 via R13. The overcurrent threshold voltage on pin 3 is 1 V.

Circuitry on Secondary Side of T2

The secondary winding of the transformer T2 provide 5 V, 12 V, 18 V and 27 V supplies which are rectified, smoothed and filtered.

SMATV MODULATOR PCB

The modulator board is split into four identical modules, each module consisting of a PLL/synthesiser and modulator. The four RF outputs are combined and amplified to provide a single UHF output which can be combined with other SMATV products and terrestrial transmissions.

In CAN 1, for example, the heart of the modulator is based around U1, consisting of an AM video modulator, video carrier VCO, FM audio modulator, and automatic gain control and clamp circuitry. Video from PL1 is low pass filtered and connected directly to pin 4 of U1. Audio from PL1 is connected to an oscillator tuned circuit consisting of varicap diode D1, C13, C14, C15 and L3. C13 is chosen depending on the required subcarrier frequency (PAL-I, PAL-G or PAL-K transmission), and should be selected as a negative temperature coefficient (COG) capacitor to compensate for temperature variations.

The oscillator is frequency modulated by the audio signal and mixed on to the vision carrier. The VCO within U1 is completed by a tuned circuit connected to pins 9, 10, 12 and 13. Tuning volts are derived from U2, PLC/synthesiser IC under control of the main board processor, and are in the range of 0 to 27 volts.

The PLL circuit is completed by the two differential prescaler output pins 7 and 8 which connect directly to U2 on pins 13 and 14. Modulation depth is set to 80% by R2 on pin 3 and U1.

UHF output emerges from pin 2. On units that have European approval for Electro-Magnetic Compatibility (EMC) the RF is passed through a tracking low-pass filter consisting of D16 and D17 and associated components which attenuate the inter-modulation products of the double sideband output. Tracking is achieved by tapping off the tuning volts to alter the capacitance of the varicap diodes D16 and D17 such that the 3 dB roll off point for the filter is proportional to the RF frequency generated.

The RF then passes through a matching circuit and padding before combining with the RF from CAN 2 using balun L7. The RF is then further combined with CAN 3 and CAN 4 via balun L38. Further matching is implemented before 2 stages of main amplification at Q13 and Q21 and Q15 and Q16. On units with EMC approval, the RF passes through a 400 MHz high pass filter prior to being amplified and combined. The amplified combined RF is then fed direct to the phono socket J1 and then distributed by coaxial cable. A further feature is a power enable circuit which switches the modulator IC U1 on or off, by software selection. This is achieved with a spare port output on U2 pin 9 and is used to enable switching transistors Q2 and Q17 to provide +5V to the modulator IC. The port is operated under control of the main board microprocessors.

NOTE: *Units that have European approval for EMC can be recognised by the modulator board part number suffix being E onwards.*

SMATV PCB OSCILLOGRAMS

The oscillograms which follow are numbered sequentially and the appropriate section and circuit diagram identification are also given above each. The oscillogram numbers are marked on the circuit diagrams and the PCB component identification diagrams. An oscilloscope probe with x10 attenuation is recommended, particularly when measuring high frequency oscillators.

Alongside each oscillogram is a note of where the test is made, a brief description (including any special instructions that may be necessary) and an indication of which components require to be checked if the oscillogram you are viewing on your oscilloscope is not the same as that shown on the page. Unless specified otherwise, all the oscillograms have been produced using a DC coupled oscilloscope probe and have the ground at the bottom of the oscillogram trace.

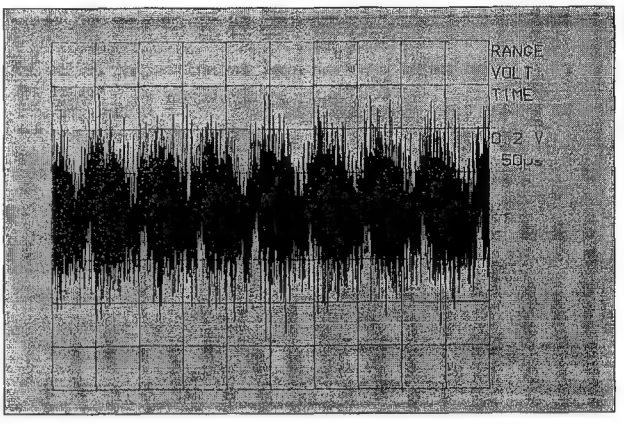
1. TUNER OUTPUT (BASEBAND) MainBoard Diagram

Test Point: Q101/Q201/Q301/Q401 emitter (4 receivers)

Description: The oscilloscope is AC coupled, the centre of the trace is set for 0V. The oscillogram trace shows the expected unfiltered, unclamped tuner output baseband waveform. All four receivers are identical, equiv. components are named.

If the trace is not as shown, check:

- the appropriate transistor in each individual receiver, Q101/Q201/Q301 or Q401 and assoc. components.
- the 5.625MHz clock on pins 1 and 2 of U100/U200/U300 or U400 and their associated components.
- that the tuning voltage on the drain of Q100/Q200/Q300 or Q400 varies when the input frequency is adjusted.
- the appropriate LNB voltage is present on pin 5 of MOD100 and MOD200.



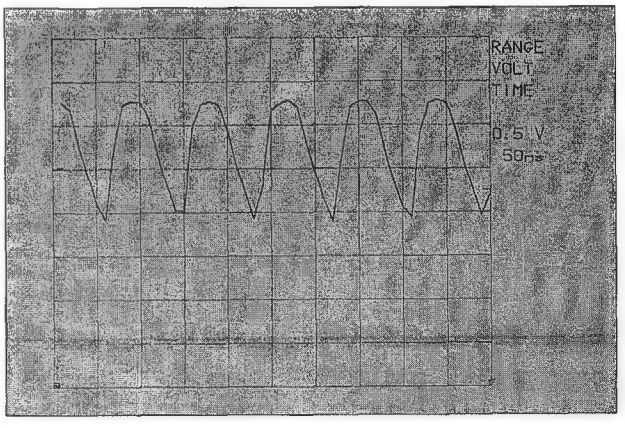
2. PLL PRESCALER OUTPUT Main Board Diagrams

Test Point: Pin 11 of Frequency Synthesiser chip U100/U200/U300 or U400.

Description: The oscillogram trace shows the expected tuner PLL prescaler output signal waveform. The amplitude may vary across the tuning range as will its frequency.

If the trace is not as shown, check:

- MOD100, MOD200, MOD300 or MOD400.
- that the tuning voltage on the drain of Q100/Q200/Q300 or Q400 varies when the input frequency is adjusted.
- the appropriate LNB voltage is present on pin 5 of MOD100 and MOD200.



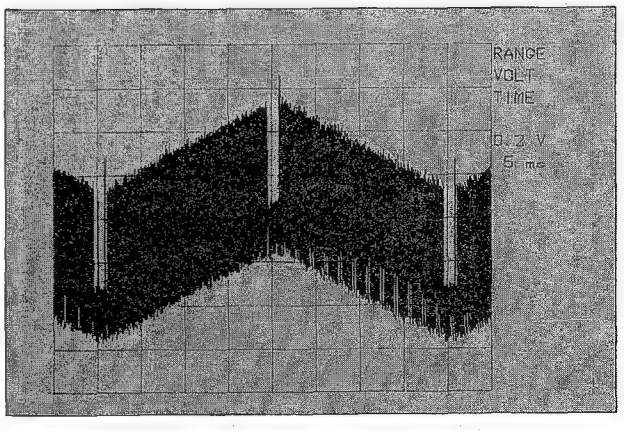
3A. VIDEO Main Board Diagrams

Test Point: Q105/Q205/Q305/Q405 base (4 receivers)

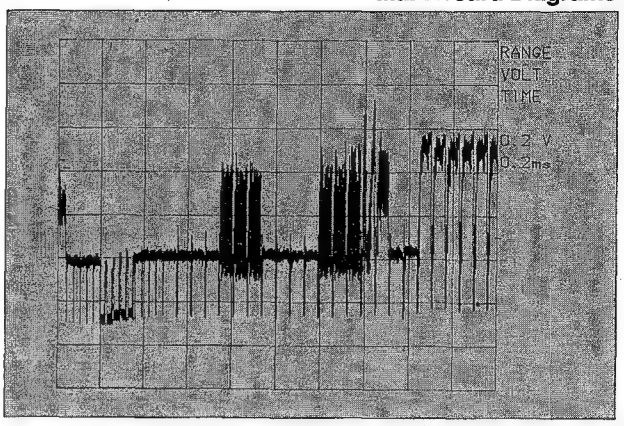
Description: The oscillogram trace with a timebase of 5ms shows the expected 1V p-p video signal waveform still with 25Hz energy dispersal after filtering and de-emphasis.

If the trace is not as shown, check:

- routing switch U101/U201/U301 or U401.
- video amplifier circuit networks in Receivers 1 to 4:-
  Rx 1 - Q102 to Q104, Rx 2 - Q202 to Q204,
  Rx 3 - Q302 to Q304, Rx 4 - Q402 to Q404 and assoc. components.



3B. VIDEO — Main Board Diagrams



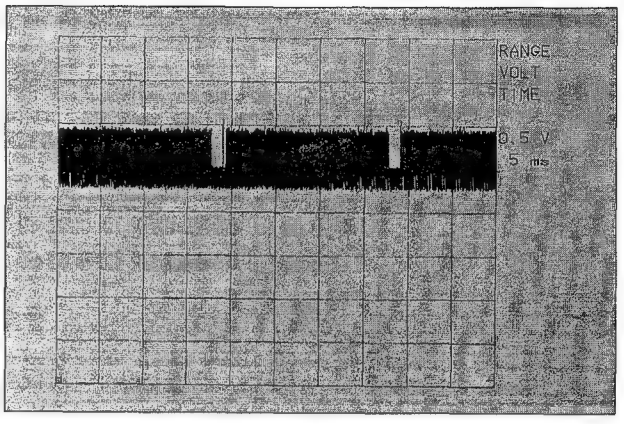
Test Point: Q105/Q205/Q305/Q405 base (4 receivers).

Description: The oscillogram trace expanded to a timebase of 0.2ms shows the 1V p-p video signal waveform still with 25Hz energy dispersal after filtering and de-emphasis.

If the trace is not as shown, check:

- as 3A

4. VIDEO — Main Board Diagrams



Test Point: Q109/Q209/Q309/Q409 emitter (4 receivers).

Description: The oscillogram trace shows the expected video signal waveform after filtering and de-emphasis and energy dispersal removal. Note the DC level.

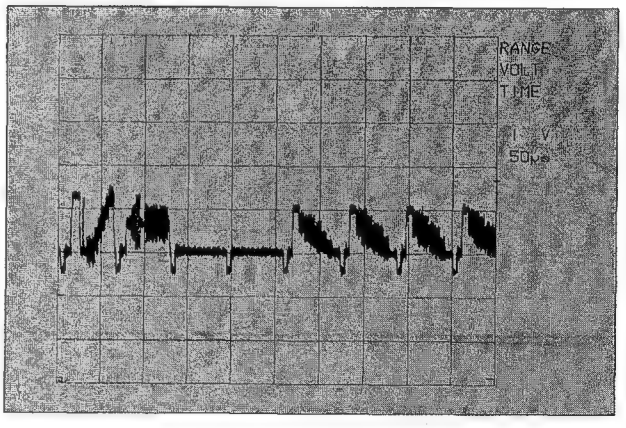
If the trace is not as shown, check:

- video amplifier circuit networks:-

  Rx 1- Q105 to Q109, Rx 2- Q205 to Q209,

  Rx 3 - Q305 to Q309 , Rx 4- Q405 to Q409 and assoc. components.

5. VIDEO OUTPUT — Main Board Diagrams



Test Point: PL5 pin 2, PL5 pin 4 and PL4 pin 2, PL4 pin 4 .

Description: The oscillogram trace shows the expected video signal waveform feeding the modulator.

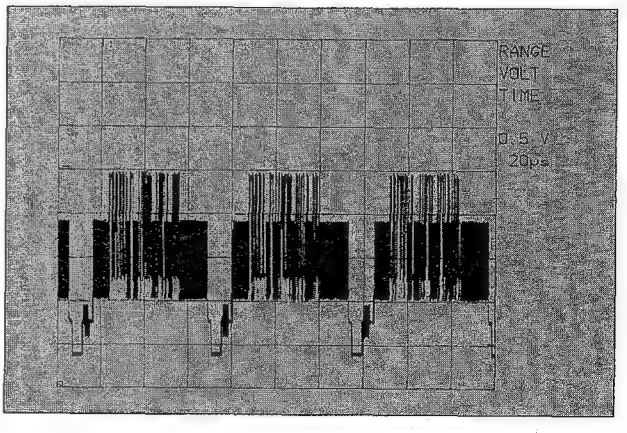
If the trace is not as shown, check:

- routing switch U101/U201/U301 or U401.
- video amplifier circuit networks:-

  Rx 1- Q110 & Q111, Rx 2- Q210 & Q211,

  Rx 3 - Q310 & Q311 , Rx 4- Q410 to Q411 and assoc. components.

6. VIDEO+ MENU — Main Board Diagrams



Test Point: Q5 emitter.

Description: The oscillogram trace shows the video signal when a menu is added over a blue background showing the text at the centre of each horizontal waveform.

If the trace is not as shown, check:

- Graphic Generator U2 and associated circuitry.
- U2 pin 30 (oscillogram 7).

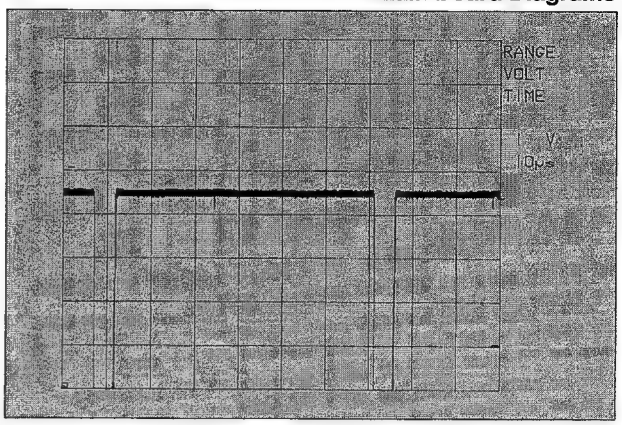
7. VIDEO

Test Point: Pin 30 of Graphic Generator chip U2.

Description: The oscillogram trace shows the horizontal synchronizing pulse (64µs spacing) waveform generated by Sync. Separator chip U5.

If the trace is not as shown, check:

- pin 17 of U5 for the 503kHz oscillation of X2.
- U5 and associated circuitry



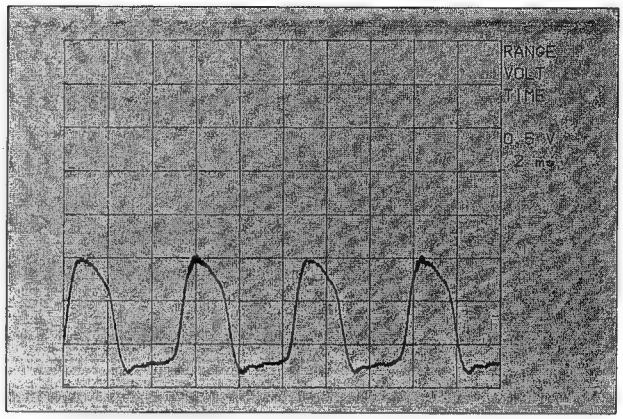
8. 4MHz REFERENCE CLOCK

Test Point: Pin 1 of the audio demodulator U103/U203/U303 or U403.

Description: The oscillogram trace shows the expected 4MHz clock reference waveform.

If the trace is not as shown, check:

- Q7 and crystal X1.



9. AUDIO VCO

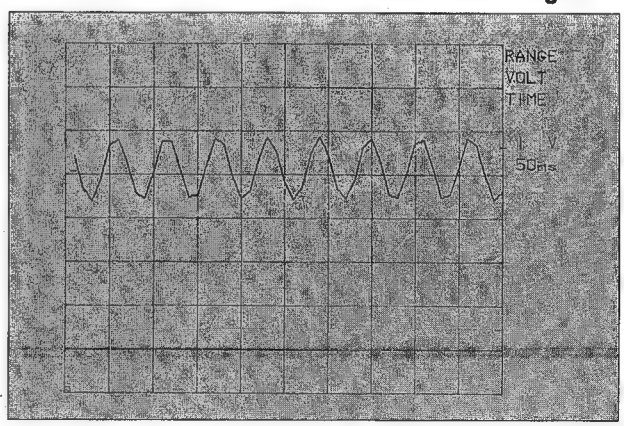
Test Point: Pin 4 of the audio demodulator chips U103/ U203/U303 or U403.

Description: The oscillogram trace shows the expected oscillation waveform of the VCO of U103.

NOTE: *the capacitance of the oscilloscope probe may alter the displayed frequency from the one expected.*

If the trace is not as shown, check:

- that tuning the audio subcarrier in the range 5MHz to 9MHz will cause the oscillation frequency to vary from 15.7MHz to 19.7MHz.
- tuning volts on pin 3 of the demodulator chip and ensure that it also varies.
- if no variation of above happens, check the varicap diode (D103/D203/D303 or D403) and its assoc. components.



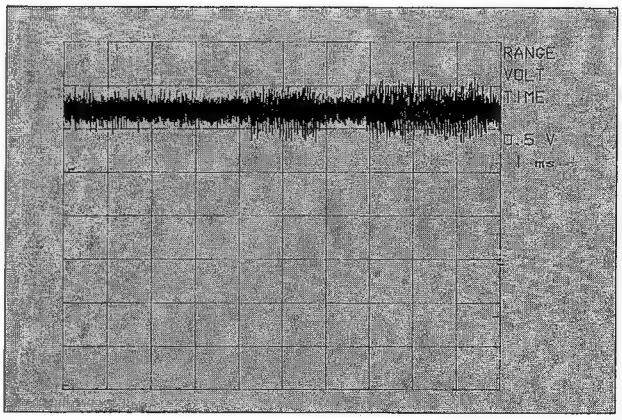
10. AUDIO IF

Test Point: Pin 24 of the audio demodulator chips U103/ U203/U303 or U403.

Description: The oscillogram trace shows the audio IF signal waveform.

If the trace is not as shown, check:

- the respective tuner output on pin 13 (i.e. MOD100, MOD 200, MOD 300 or MOD 400).
- Rx 1 - Q116, Rx 2 - Q216, Rx 3 - Q316, Rx 4 - Q316 and assoc. circuitry.



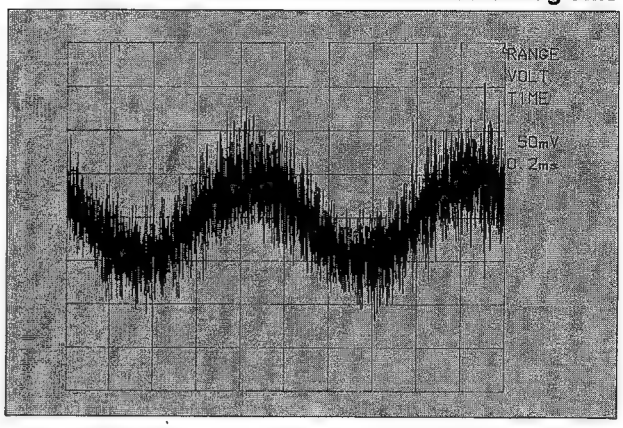
11. AUDIO

Test Point: The negative electrodes of C151/C251/C351 or C451 (in the appropriate receiver circuit).

Description: The oscilloscope is AC coupled, the centre of the trace is set for 0V. The oscillogram trace shows the expected unfiltered, non de-emphasised baseband audio tone waveform.

If the trace is not as shown, check:

- the respective demodulator chip (U103/U203/U303 or U403) and its assoc. components)



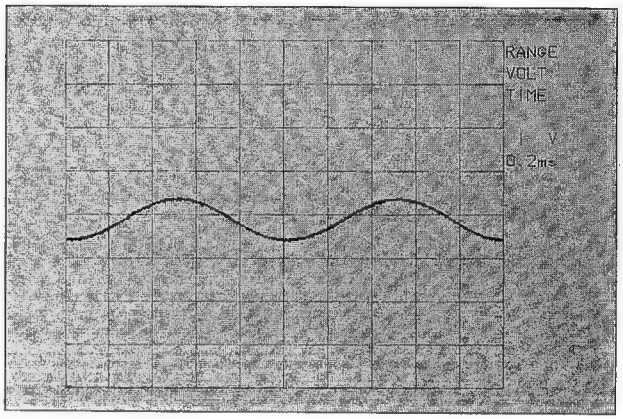
12. AUDIO

Test Point: The base of Q118/Q218/Q318 or Q418.

Description: The oscillogram trace shows the audio tone waveform after filtering, de-emphasis and noise reduction. Note the DC level.

If the trace is not as shown, check:

- the filtering and Panda expander chip U106 or U306 and assoc. circuitry.
- 4MHz clock on pin 8 of U106 and U306.
- audio routing switches Rx 1- U104, Rx 2 - U204, Rx 3 - U304 or Rx 4 - U404.
- audio amplifier stages U105 or U305.



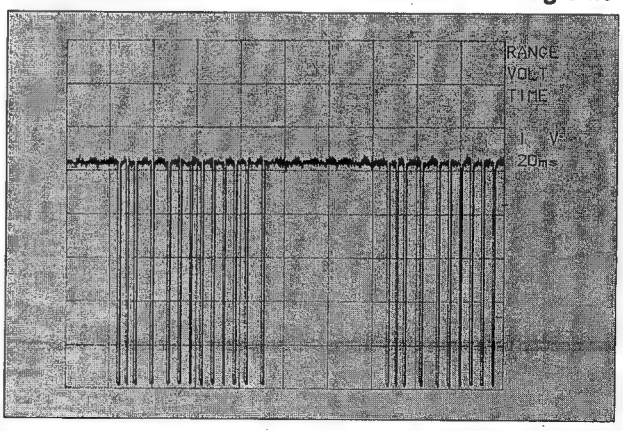
13. INFRA-RED DATA

Test Point: Pin 5 of the microprocessor chip U8.

Description: The oscillogram trace shows the typical data signal out of the IR sensor: press keys on the handset to obtain the trace.

If the trace is not as shown, check:

- IR enable switch is enabled.
- handset.
- IR 1.



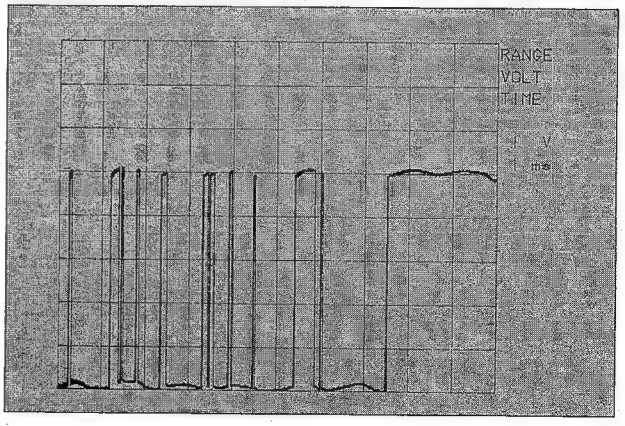
14. SERIAL DATA (SDA)

Test Point: Pin 38 of the microprocessor chip U8.

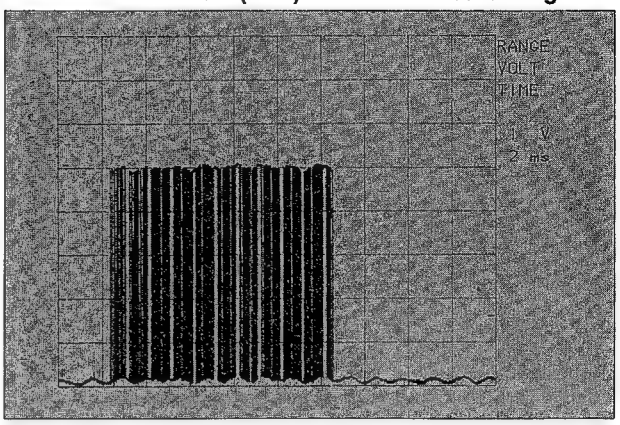
Description: The oscillogram trace shows the typical serial data (SDA) signal on the I²C bus when the handset is operated.

If the trace is not as shown, check:

- the microprocessor U8 and any ICs on the I²C bus.



15. SERIAL CLOCK (SCL) — Main Board Diagrams



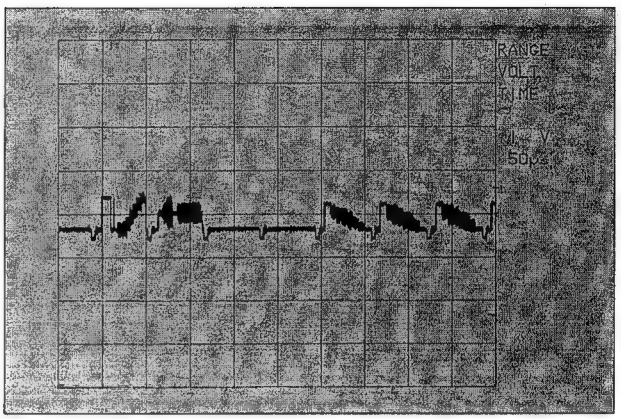
Test Point: Pin 29 of the microprocessor chip U8.

Description: The oscillogram trace shows the typical serial clock (SCL) signal on the I²C bus when the handset is operated.

If the trace is not as shown, check:

- the microprocessor U8 and any ICs on the I²C bus.

16. VIDEO — Modulator Diagram



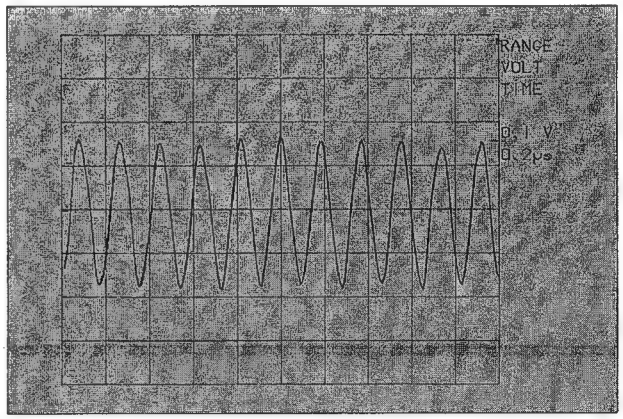
Test Point: Pin 4 of video modulator chip U1/U3/U5 or U7.

Description: The oscillogram trace shows the 1 volt p-p of video waveform showing the vertical interval test signals (VITS) and three active lines of a satellite transmission.

If the trace is not as shown, check:

- the respective amplifier stage, Q110-Q111, Q210-Q211, Q310-Q311 or Q410-Q411.
- the associated modulator plug PL1 pin 2/PL1 pin 4/PL2 pin 2 or PL2 pin 4.

17. AUDIO SUBCARRIER — Modulator Diagram



Test Point: Pin 15 and 16 of video modulator chip U1/U3/U5 or U7.

Description: The oscillogram trace shows the oscillation of the audio subcarrier, its frequency will be different according to the television standard being transmitted and will vary slightly when modulated by the incoming audio signal.

If the trace is not as shown, check:

- the appropriate video modulator chip U1/U3/U5 or U7.
- the varicap diodes D1/D4/D7 or D10 and the assoc. circuitry.
- for the presence of an audio signal at the cathode of D1/D4/D7 or D10.

SPARES - PARTS LIST

ELECTRICAL PARTS FOR MAIN BOARD

Capacitors

C1	CLASS X CAP-100NF 250V 20%	159-1048780
C2	100UF 400V +-20% 10MM 105 RAD ELEC CAP	855-1079780
C3	CER CAP 1NF 2KV 7.5MM 10% HR SERIES TR	159-1029651
C4	SMD 1.2NF 50V 5% CER C0G CAP 0805 (TRS)	950-1225501
C5	1000UF 16V 5MM RAD ELEC' CAP (10X16)	155-1081750
C6	22UF 16V 5MM RADIAL ELECT' CAP TR	155-2261751
C7	10UF 25V 5MM RADIAL ELECT' CAP TR	155-1062751
C8	10UF 25V 5MM RADIAL ELECT' CAP TR	155-1062751
C9	*A* CLASS Y CAP-4N7 250V 20%	159-4728781
C10	SMD 220NF 50V 5% CER COG CAP 0805 TRS	950-2245501
C11	100UF 35V 5MM RADIAL ELECT' CAP	155-1073751
C12	SMD 330PF 50V 10% CER COG CAP 0805 (TRS)	950-3315601
C13	SMD 220NF 50V 5% CER COG CAP 0805 TRS	950-2245501
C14	2200UF 25V +-20% 7.5MM RAD ELEC YXB CAP	855-2282760
C15	100UF 35V 5MM RADIAL ELECT' CAP	155-1073751
C16	SMD 330PF 50V 10% CER COG CAP 0805 (TRS)	950-3315601
C17	SMD 220NF 50V 5% CER COG CAP 0805 TRS	950-2245501
C18	2200UF 25V +-20% 7.5MM RAD ELEC YXB CAP	855-2282760
C22	SMD 330PF 50V 10% CER COG CAP 0805 (TRS)	950-3315601
C23	SMD 220NF 50V 5% CER COG CAP 0805 TRS	950-2245501
C24	2200UF 25V +-20% 7.5MM RAD ELEC YXB CAP	855-2282760
C25	1000UF 16V 5MM RAD ELEC' CAP (10X16)	155-1081750
C28	SMD 0.1UF 25V 20/80% CER Y5V CAP 0805 TR	950-1042951
C29	10UF 16V 5MM RADIAL ELECT' CAP TR	155-1061751
C30	4.7UF 16V 5MM RADIAL ELECT' CAP TR	155-4751751
C31	SMD 220NF 50V 5% CER COG CAP 0805 TRS	950-2245501
C32	SMD 220NF 50V 5% CER COG CAP 0805 TRS	950-2245501
C33	SMD 33PF 50V 5% CER COG CAP 0805 (TRS)	950-3305501
C34	SMD 33PF 50V 5% CER COG CAP 0805 (TRS)	950-3305501
C35	SMD 12PF 50V 5% CER COG CAP 0805 (TRS)	950-1205501
C36	SMD 12PF 50V 5% CER COG CAP 0805 (TRS)	950-1205501
C37	2.2UF 16V 5MM RADIAL ELECT' CAP TR	155-2251751
C38	3.3UF 16V 5MM RADIAL ELECT' CAP TR	155-3351751
C39	SMD 0.1UF 25V 20/80% CER Y5V CAP 0805 TR	950-1042951
C40	10UF 16V 5MM RADIAL ELECT' CAP TR	155-1061751
C41	10UF 16V 5MM RADIAL ELECT' CAP TR	155-1061751
C42	1UF 16V 5MM RADIAL ELECT' CAP TR	155-1051751
C43	22UF 16V 5MM RADIAL ELECT' CAP TR	155-2261751
C44	SMD 3.3NF 50V 5% CER CAP 0805 (TRS)	950-3325501
C45	SMD 68NF 25V 10% CER X7R CAP 0805 (TRS)	950-6832621
C46	10UF 16V 5MM RADIAL ELECT' CAP TR	155-1061751
C47	SMD 0.1UF 25V 20/80% CER Y5V CAP 0805 TR	950-1042951
C48	SMD 220NF 50V 5% CER COG CAP 0805 TRS	950-2245501
C49	SMD 100PF 50V 5% CER COG CAP 0805 (TRS)	950-1015501
C50	SMD 220NF 50V 5% CER COG CAP 0805 TRS	950-2245501
C51	SMD 1N5 50V 10% CER.CAP 0805 (TRS)	950-1525601
C52	10UF 16V 5MM RADIAL ELECT' CAP TR	155-1061751
C53	SMD 22NF 50V 10% CER.CAP 0805	950-2235601
C54	SMD 4N7 50V 5% CER CAP 0805 (TRS)	950-4725501
C55	SMD 4N7 50V 5% CER CAP 0805 (TRS)	950-4725501
C56	10UF 25V 5MM RADIAL ELECT' CAP TR	155-1062751
C57	SMD 3.3NF 50V 5% CER CAP 0805 (TRS)	950-3325501
C58	SMD 470PF 50V 10% CER.CAP 0805 (TRS)	950-4715601
C59	4.7UF 16V 5MM RADIAL ELECT' CAP TR	155-4751751
C60	SMD 0.1UF 25V 20/80% CER Y5V CAP 0805 TR	950-1042951
C63	SMD 18PF 50V 5% CER COG CAP 0805 (TRS)	950-1805501
C66	1UF 16V 5MM RADIAL ELECT' CAP TR	155-1051751
C67	220UF 16V 5MM RADIAL ELECT' CAP TR	155-2271751
C68	SMD 0.1UF 25V 20/80% CER Y5V CAP 0805 TR	950-1042951
C70	SMD 0.1UF 25V 20/80% CER Y5V CAP 0805 TR	950-1042951
C101	SMD 33PF 50V 5% CER COG CAP 0805 (TRS)	950-3305501
C102	SMD 0.1UF 25V 20/80% CER Y5V CAP 0805 TR	950-1042951
C103	1000UF 16V 5MM RAD ELEC' CAP (10X16)	155-1081750
C104	10UF 35V 5MM RADIAL ELECT' CAP TR	155-1063751
C105	SMD 100NF 50V 20/80% CER Y5V CAP 0805 TR	950-1045951
C106	SMD 10NF 50V 5% CER.CAP 0805	950-1035501
C107	SMD 15PF 50V 5% CER COG CAP 0805 (TRS)	950-1505501
C108	SMD 15PF 50V 5% CER COG CAP 0805 (TRS)	950-1505501
C109	1000UF 16V 5MM RAD ELEC' CAP (10X16)	155-1081750
C110	47UF 16V 5MM RADIAL ELECT' CAP TR	155-4761751
C111	47UF 16V 5MM RADIAL ELECT' CAP TR	155-4761751
C112	SMD 390PF 50V 5% CER COG CAP 0805 (TRS)	950-3915501
C113	SMD 10PF 50V 5% CER CAP 0805 (TRS)	950-1005501
C115	SMD 56PF 50V 5% CER COG CAP 0805 (TRS)	950-5605501
C117	SMD 56PF 50V 5% CER COG CAP 0805 (TRS)	950-5605501
C118	SMD 0.1UF 25V 20/80% CER Y5V CAP 0805 TR	950-1042951
C119	10UF 16V 5MM RADIAL ELECT' CAP TR	155-1061751
C120	SMD 100PF 50V 5% CER COG CAP 0805 (TRS)	950-1015501
C121	SMD 100PF 50V 5% CER COG CAP 0805 (TRS)	950-1015501
C122	SMD 100NF 25V 10% CER X7R CAP 0805 (TRS)	950-1042621
C123	SMD 100NF 25V 10% CER X7R CAP 0805 (TRS)	950-1042621
C124	SMD 100PF 50V 5% CER COG CAP 0805 (TRS)	950-1015501
C125	10UF 16V 5MM RADIAL ELECT' CAP TR	155-1061751
C126	22UF 16V 5MM RADIAL ELECT' CAP TR	155-2261751
C127	SMD 180PF 50V 5% CER COG CAP 0805 TR	950-1815501
C128	47UF 16V 5MM RADIAL ELECT' CAP TR	155-4761751
C129	470UF 16V 5MM RADIAL ELECT' CAP TR	155-4771751
C130	SMD 0.1W 5% ZEROHM LINK-0805 (TRS)	940-0000501
C131	SMD 220NF 50V 5% CER COG CAP 0805 TRS	950-2245501
C133	SMD 330PF 50V 10% CER COG CAP 0805 (TRS)	950-3315601
C134	1000UF 16V 5MM RAD ELEC' CAP (10X16)	155-1081750
C135	SMD 0.1UF 25V 20/80% CER Y5V CAP 0805 TR	950-1042951
C136	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C137	SMD 100PF 50V 5% CER COG CAP 0805 (TRS)	950-1015501
C139	1UF 16V 5MM RADIAL ELECT' CAP TR	155-1051751
C140	SMD 0.1UF 25V 20/80% CER Y5V CAP 0805 TR	950-1042951
C141	SMD 100PF 50V 5% CER COG CAP 0805 (TRS)	950-1015501
C142	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C146	SMD 100NF 25V 10% CER X7R CAP 0805 (TRS)	950-1042621
C147	SMD 10NF 50V 5% CER.CAP 0805	950-1035501
C148	SMD 390PF 50V 5% CER COG CAP 0805 (TRS)	950-3915501
C149	SMD 0.1UF 25V 20/80% CER Y5V CAP 0805 TR	950-1042951
C150	SMD 0.1UF 25V 20/80% CER Y5V CAP 0805 TR	950-1042951
C151	1UF 16V 5MM RADIAL ELECT' CAP TR	155-1051751
C153	1UF 16V 5MM RADIAL ELECT' CAP TR	155-1051751
C154	SMD 150PF 50V 5% CER COG CAP 0805 (TRS)	950-1515501
C155	SMD 0.1UF 25V 20/80% CER Y5V CAP 0805 TR	950-1042951
C156	SMD 0.1UF 25V 20/80% CER Y5V CAP 0805 TR	950-1042951
C157	220UF 16V 5MM RADIAL ELECT' CAP TR	155-2271751
C159	SMD 33NF 25V 10% CER X7R CAP 0805 (TRS)	950-3332621
C160	10UF 16V 5MM RADIAL ELECT' CAP TR	155-1061751
C161	47UF 16V 5MM RADIAL ELECT' CAP TR	155-4761751
C162	SMD 2.2NF 50V 5% CER COG CAP 0805 (TRS)	950-2225501
C163	SMD 0.1UF 25V 20/80% CER Y5V CAP 0805 TR	950-1042951
C164	220UF 16V 5MM RADIAL ELECT' CAP TR	155-2271751
C165	10UF 16V 5MM RADIAL ELECT' CAP TR	155-1061751
C166	SMD 15NF 50V 10% CER X7R CAP 0805 (TRS)	950-1535621
C167	SMD 100NF 25V 10% CER X7R CAP 0805 (TRS)	950-1042621
C168	SMD 100NF 25V 10% CER X7R CAP 0805 (TRS)	950-1042621
C170	SMD 10NF 50V 5% CER.CAP 0805	950-1035501
C171	47UF 16V 5MM RADIAL ELECT' CAP TR	155-4761751
C172	47UF 16V 5MM RADIAL ELECT' CAP TR	155-4761751
C173	4.7UF 16V 5MM RADIAL ELECT' CAP TR	155-4751751
C174	47UF 16V 5MM RADIAL ELECT' CAP TR	155-4761751
C175	SMD 2.2NF 50V 5% CER COG CAP 0805 (TRS)	950-2225501
C177	10UF 16V 5MM RADIAL ELECT' CAP TR	155-1061751
C178	10UF 16V 5MM RADIAL ELECT' CAP TR	155-1061751
C180	SMD 0.1UF 25V 20/80% CER Y5V CAP 0805 TR	950-1042951
C181	SMD 68PF 50V 5% CER COG CAP 0805 (TRS)	950-6805501
C184	SMD 68PF 50V 5% CER COG CAP 0805 (TRS)	950-6805501
C201	SMD 33PF 50V 5% CER COG CAP 0805 (TRS)	950-3305501
C202	SMD 0.1UF 25V 20/80% CER Y5V CAP 0805 TR	950-1042951
C203	1000UF 16V 5MM RAD ELEC' CAP (10X16)	155-1081750
C204	10UF 35V 5MM RADIAL ELECT' CAP TR	155-1063751

C205	SMD 100NF 50V 20/80% CER Y5V CAP 0805 TR	950-1045951
C206	SMD 10NF 50V 5% CER.CAP 0805	950-1035501
C209	10UF 16V 5MM RADIAL ELECT' CAP TR	155-1061751
C210	47UF 16V 5MM RADIAL ELECT' CAP TR	155-4761751
C211	47UF 16V 5MM RADIAL ELECT' CAP TR	155-4761751
C212	SMD 390PF 50V 5% CER COG CAP 0805 (TRS)	950-3915501
C213	SMD 10PF 50V 5% CER CAP 0805 (TRS)	950-1005501
C215	SMD 56PF 50V 5% CER COG CAP 0805 (TRS)	950-5605501
C217	SMD 56PF 50V 5% CER COG CAP 0805 (TRS)	950-5605501
C218	SMD 0.1UF 25V 20/80% CER Y5V CAP 0805 TR	950-1042951
C219	10UF 16V 5MM RADIAL ELECT' CAP TR	155-1061751
C220	SMD 100PF 50V 5% CER COG CAP 0805 (TRS)	950-1015501
C221	SMD 100PF 50V 5% CER COG CAP 0805 (TRS)	950-1015501
C222	SMD 100NF 25V 10% CER X7R CAP 0805 (TRS)	950-1042621
C223	SMD 100NF 25V 10% CER X7R CAP 0805 (TRS)	950-1042621
C224	SMD 100PF 50V 5% CER COG CAP 0805 (TRS)	950-1015501
C225	10UF 16V 5MM RADIAL ELECT' CAP TR	155-1061751
C226	22UF 16V 5MM RADIAL ELECT' CAP TR	155-2261751
C227	SMD 180PF 50V 5% CER COG CAP 0805 TR	950-1815501
C228	47UF 16V 5MM RADIAL ELECT' CAP TR	155-4761751
C230	SMD 0.1W 5% ZEROHM LINK-0805 (TRS)	940-0000501
C231	SMD 220NF 50V 5% CER COG CAP 0805 TRS	950-2245501
C233	SMD 330PF 50V 10% CER COG CAP 0805 (TRS)	950-3315601
C234	1000UF 16V 5MM RAD ELEC' CAP (10X16)	155-1081750
C235	SMD 0.1UF 25V 20/80% CER Y5V CAP 0805 TR	950-1042951
C236	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C237	SMD 100PF 50V 5% CER COG CAP 0805 (TRS)	950-1015501
C239	1UF 16V 5MM RADIAL ELECT' CAP TR	155-1051751
C240	SMD 0.1UF 25V 20/80% CER Y5V CAP 0805 TR	950-1042951
C241	SMD 100PF 50V 5% CER COG CAP 0805 (TRS)	950-1015501
C242	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C246	SMD 470NF 16V 20/80 CER Y5V CAP 0805 TRS	950-4741951
C247	SMD 10NF 50V 5% CER.CAP 0805	950-1035501
C248	SMD 390PF 50V 5% CER COG CAP 0805 (TRS)	950-3915501
C250	SMD 0.1UF 25V 20/80% CER Y5V CAP 0805 TR	950-1042951
C251	1UF 16V 5MM RADIAL ELECT' CAP TR	155-1051751
C253	1UF 16V 5MM RADIAL ELECT' CAP TR	155-1051751
C255	SMD 0.1UF 25V 20/80% CER Y5V CAP 0805 TR	950-1042951
C256	SMD 0.1UF 25V 20/80% CER Y5V CAP 0805 TR	950-1042951
C259	SMD 33NF 25V 10% CER X7R CAP 0805 (TRS)	950-3332621
C261	47UF 16V 5MM RADIAL ELECT' CAP TR	155-4761751
C262	SMD 2.2NF 50V 5% CER COG CAP 0805 (TRS)	950-2225501
C263	SMD 0.1UF 25V 20/80% CER Y5V CAP 0805 TR	950-1042951
C265	10UF 16V 5MM RADIAL ELECT' CAP TR	155-1061751
C266	SMD 15NF 50V 10% CER X7R CAP 0805 (TRS)	950-1535621
C267	SMD 100NF 25V 10% CER X7R CAP 0805 (TRS)	950-1042621
C268	SMD 100NF 25V 10% CER X7R CAP 0805 (TRS)	950-1042621
C270	SMD 10NF 50V 5% CER.CAP 0805	950-1035501
C271	47UF 16V 5MM RADIAL ELECT' CAP TR	155-4761751
C273	4.7UF 16V 5MM RADIAL ELECT' CAP TR	155-4751751
C274	47UF 16V 5MM RADIAL ELECT' CAP TR	155-4761751
C275	SMD 2.2NF 50V 5% CER COG CAP 0805 (TRS)	950-2225501
C277	10UF 16V 5MM RADIAL ELECT' CAP TR	155-1061751
C278	10UF 16V 5MM RADIAL ELECT' CAP TR	155-1061751
C279	SMD 10NF 50V 5% CER.CAP 0805	950-1035501
C280	SMD 0.1UF 25V 20/80% CER Y5V CAP 0805 TR	950-1042951
C281	SMD 68PF 50V 5% CER COG CAP 0805 (TRS)	950-6805501
C284	SMD 68PF 50V 5% CER COG CAP 0805 (TRS)	950-6805501
C301	SMD 33PF 50V 5% CER COG CAP 0805 (TRS)	950-3305501
C302	SMD 0.1UF 25V 20/80% CER Y5V CAP 0805 TR	950-1042951
C303	1000UF 16V 5MM RAD ELEC' CAP (10X16)	155-1081750
C304	10UF 35V 5MM RADIAL ELECT' CAP TR	155-1063751
C305	SMD 100NF 50V 20/80% CER Y5V CAP 0805 TR	950-1045951
C306	SMD 10NF 50V 5% CER.CAP 0805	950-1035501
C307	SMD 15PF 50V 5% CER COG CAP 0805 (TRS)	950-1505501
C308	SMD 15PF 50V 5% CER COG CAP 0805 (TRS)	950-1505501
C309	10UF 16V 5MM RADIAL ELECT' CAP TR	155-1061751
C310	47UF 16V 5MM RADIAL ELECT' CAP TR	155-4761751
C311	47UF 16V 5MM RADIAL ELECT' CAP TR	155-4761751
C312	SMD 390PF 50V 5% CER COG CAP 0805 (TRS)	950-3915501
C313	SMD 10PF 50V 5% CER CAP 0805 (TRS)	950-1005501
C315	SMD 56PF 50V 5% CER COG CAP 0805 (TRS)	950-5605501
C317	SMD 56PF 50V 5% CER COG CAP 0805 (TRS)	950-5605501
C318	SMD 0.1UF 25V 20/80% CER Y5V CAP 0805 TR	950-1042951
C319	10UF 16V 5MM RADIAL ELECT' CAP TR	155-1061751
C320	SMD 100PF 50V 5% CER COG CAP 0805 (TRS)	950-1015501
C321	SMD 100PF 50V 5% CER COG CAP 0805 (TRS)	950-1015501
C322	SMD 100NF 25V 10% CER X7R CAP 0805 (TRS)	950-1042621
C323	SMD 100NF 25V 10% CER X7R CAP 0805 (TRS)	950-1042621
C324	SMD 100PF 50V 5% CER COG CAP 0805 (TRS)	950-1015501
C325	10UF 16V 5MM RADIAL ELECT' CAP TR	155-1061751
C326	22UF 16V 5MM RADIAL ELECT' CAP TR	155-2261751
C327	SMD 180PF 50V 5% CER COG CAP 0805 TR	950-1815501
C328	47UF 16V 5MM RADIAL ELECT' CAP TR	155-4761751
C329	470UF 16V 5MM RADIAL ELECT' CAP TR	155-4771751
C330	SMD 0.1W 5% ZEROHM LINK-0805 (TRS)	940-0000501
C331	SMD 220NF 50V 5% CER COG CAP 0805 TRS	950-2245501
C333	SMD 330PF 50V 10% CER COG CAP 0805 (TRS)	950-3315601
C334	1000UF 16V 5MM RAD ELEC' CAP (10X16)	155-1081750
C335	SMD 0.1UF 25V 20/80% CER Y5V CAP 0805 TR	950-1042951
C336	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C337	SMD 100PF 50V 5% CER COG CAP 0805 (TRS)	950-1015501
C339	1UF 16V 5MM RADIAL ELECT' CAP TR	155-1051751
C340	SMD 0.1UF 25V 20/80% CER Y5V CAP 0805 TR	950-1042951
C341	SMD 100PF 50V 5% CER COG CAP 0805 (TRS)	950-1015501
C342	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C346	SMD 100NF 25V 10% CER X7R CAP 0805 (TRS)	950-1042621
C347	SMD 10NF 50V 5% CER.CAP 0805	950-1035501
C348	SMD 390PF 50V 5% CER COG CAP 0805 (TRS)	950-3915501
C349	SMD 0.1UF 25V 20/80% CER Y5V CAP 0805 TR	950-1042951
C350	SMD 0.1UF 25V 20/80% CER Y5V CAP 0805 TR	950-1042951
C351	1UF 16V 5MM RADIAL ELECT' CAP TR	155-1051751
C353	1UF 16V 5MM RADIAL ELECT' CAP TR	155-1051751
C354	SMD 150PF 50V 5% CER COG CAP 0805 (TRS)	950-1515501
C355	SMD 0.1UF 25V 20/80% CER Y5V CAP 0805 TR	950-1042951
C356	SMD 0.1UF 25V 20/80% CER Y5V CAP 0805 TR	950-1042951
C357	220UF 16V 5MM RADIAL ELECT' CAP TR	155-2271751
C359	SMD 33NF 25V 10% CER X7R CAP 0805 (TRS)	950-3332621
C360	10UF 16V 5MM RADIAL ELECT' CAP TR	155-1061751
C361	47UF 16V 5MM RADIAL ELECT' CAP TR	155-4761751
C362	SMD 2.2NF 50V 5% CER COG CAP 0805 (TRS)	950-2225501
C363	SMD 0.1UF 25V 20/80% CER Y5V CAP 0805 TR	950-1042951
C364	220UF 16V 5MM RADIAL ELECT' CAP TR	155-2271751
C365	10UF 16V 5MM RADIAL ELECT' CAP TR	155-1061751
C366	SMD 15NF 50V 10% CER X7R CAP 0805 (TRS)	950-1535621
C367	SMD 100NF 25V 10% CER X7R CAP 0805 (TRS)	950-1042621
C368	SMD 100NF 25V 10% CER X7R CAP 0805 (TRS)	950-1042621
C370	SMD 10NF 50V 5% CER.CAP 0805	950-1035501
C371	47UF 16V 5MM RADIAL ELECT' CAP TR	155-4761751
C372	47UF 16V 5MM RADIAL ELECT' CAP TR	155-4761751
C373	4.7UF 16V 5MM RADIAL ELECT' CAP TR	155-4751751
C374	47UF 16V 5MM RADIAL ELECT' CAP TR	155-4761751
C375	SMD 2.2NF 50V 5% CER COG CAP 0805 (TRS)	950-2225501
C377	10UF 16V 5MM RADIAL ELECT' CAP TR	155-1061751
C378	10UF 16V 5MM RADIAL ELECT' CAP TR	155-1061751
C379	SMD 10NF 50V 5% CER.CAP 0805	950-1035501
C380	SMD 0.1UF 25V 20/80% CER Y5V CAP 0805 TR	950-1042951
C381	SMD 68PF 50V 5% CER COG CAP 0805 (TRS)	950-6805501
C384	SMD 68PF 50V 5% CER COG CAP 0805 (TRS)	950-6805501
C401	SMD 33PF 50V 5% CER COG CAP 0805 (TRS)	950-3305501
C402	SMD 0.1UF 25V 20/80% CER Y5V CAP 0805 TR	950-1042951
C403	10UF 16V 5MM RADIAL ELECT' CAP TR	155-1061751
C404	10UF 35V 5MM RADIAL ELECT' CAP TR	155-1063751
C405	SMD 100NF 50V 20/80% CER Y5V CAP 0805 TR	950-1045951
C406	SMD 10NF 50V 5% CER.CAP 0805	950-1035501
C409	10UF 16V 5MM RADIAL ELECT' CAP TR	155-1061751
C410	47UF 16V 5MM RADIAL ELECT' CAP TR	155-4761751
C411	47UF 16V 5MM RADIAL ELECT' CAP TR	155-4761751

C412	SMD 390PF 50V 5% CER COG CAP 0805 (TRS)	950-3915501
C413	SMD 10PF 50V 5% CER CAP 0805 (TRS)	950-1005501
C415	SMD 56PF 50V 5% CER COG CAP 0805 (TRS)	950-5605501
C417	SMD 56PF 50V 5% CER COG CAP 0805 (TRS)	950-5605501
C418	SMD 0.1UF 25V 20/80% CER Y5V CAP 0805 TR	950-1042951
C419	10UF 16V 5MM RADIAL ELECT' CAP TR	155-1061751
C420	SMD 100PF 50V 5% CER COG CAP 0805 (TRS)	950-1015501
C421	SMD 100PF 50V 5% CER COG CAP 0805 (TRS)	950-1015501
C422	SMD 100NF 25V 10% CER X7R CAP 0805 (TRS)	950-1042621
C423	SMD 100NF 25V 10% CER X7R CAP 0805 (TRS)	950-1042621
C424	SMD 100PF 50V 5% CER COG CAP 0805 (TRS)	950-1015501
C425	10UF 16V 5MM RADIAL ELECT' CAP TR	155-1061751
C426	22UF 16V 5MM RADIAL ELECT' CAP TR	155-2261751
C427	SMD 180PF 50V 5% CER COG CAP 0805 TR	950-1815501
C428	47UF 16V 5MM RADIAL ELECT' CAP TR	155-4761751
C430	SMD 0.1W 5% ZEROHM LINK-0805 (TRS)	940-0000501
C431	SMD 220NF 50V 5% CER COG CAP 0805 TRS	950-2245501
C433	SMD 330PF 50V 10% CER COG CAP 0805 (TRS)	950-3315601
C434	1000UF 16V 5MM RAD ELEC' CAP (10X16)	155-1081750
C435	SMD 0.1UF 25V 20/80% CER Y5V CAP 0805 TR	950-1042951
C436	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C437	SMD 100PF 50V 5% CER COG CAP 0805 (TRS)	950-1015501
C439	1UF 16V 5MM RADIAL ELECT' CAP TR	155-1051751
C440	SMD 0.1UF 25V 20/80% CER Y5V CAP 0805 TR	950-1042951
C441	SMD 100PF 50V 5% CER COG CAP 0805 (TRS)	950-1015501
C442	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C445	SMD 0.1UF 25V 20/80% CER Y5V CAP 0805 TR	950-1042951
C446	SMD 100NF 25V 10% CER X7R CAP 0805 (TRS)	950-1042621
C447	SMD 10NF 50V 5% CER.CAP 0805	950-1035501
C448	SMD 390PF 50V 5% CER COG CAP 0805 (TRS)	950-3915501
C449	SMD 0.1UF 25V 20/80% CER Y5V CAP 0805 TR	950-1042951
C451	1UF 16V 5MM RADIAL ELECT' CAP TR	155-1051751
C453	1UF 16V 5MM RADIAL ELECT' CAP TR	155-1051751
C456	SMD 0.1UF 25V 20/80% CER Y5V CAP 0805 TR	950-1042951
C459	SMD 33NF 25V 10% CER X7R CAP 0805 (TRS)	950-3332621
C461	47UF 16V 5MM RADIAL ELECT' CAP TR	155-4761751
C462	SMD 2.2NF 50V 5% CER COG CAP 0805 (TRS)	950-2225501
C463	SMD 0.1UF 25V 20/80% CER Y5V CAP 0805 TR	950-1042951
C465	10UF 16V 5MM RADIAL ELECT' CAP TR	155-1061751
C466	SMD 15NF 50V 10% CER X7R CAP 0805 (TRS)	950-1535621
C467	SMD 100NF 25V 10% CER X7R CAP 0805 (TRS)	950-1042621
C468	SMD 100NF 25V 10% CER X7R CAP 0805 (TRS)	950-1042621
C470	SMD 10NF 50V 5% CER.CAP 0805	950-1035501
C471	47UF 16V 5MM RADIAL ELECT' CAP TR	155-4761751
C473	4.7UF 16V 5MM RADIAL ELECT' CAP TR	155-4751751
C474	47UF 16V 5MM RADIAL ELECT' CAP TR	155-4761751
C475	SMD 2.2NF 50V 5% CER COG CAP 0805 (TRS)	950-2225501
C477	10UF 16V 5MM RADIAL ELECT' CAP TR	155-1061751
C478	10UF 16V 5MM RADIAL ELECT' CAP TR	155-1061751
C479	SMD 10NF 50V 5% CER.CAP 0805	950-1035501
C480	SMD 0.1UF 25V 20/80% CER Y5V CAP 0805 TR	950-1042951
C481	SMD 68PF 50V 5% CER COG CAP 0805 (TRS)	950-6805501
C483	1000UF 16V 5MM RAD ELEC' CAP (10X16)	155-1081750
C484	SMD 68PF 50V 5% CER COG CAP 0805 (TRS)	950-6805501

Diodes

D1	DIODE-1N4007 TR	120-0400701
D2	DIODE-1N4007 TR	120-0400701
D3	DIODE-1N4007 TR	120-0400701
D4	DIODE-1N4007 TR	120-0400701
D5	DIODE-BYV96D (PHILIPS) TR	120-0009611
D6	DIODE-BYV96D (PHILIPS) TR	120-0009611
D7	SIGNAL DIODE-1N4148 75MA 75V TR	120-0414801
D8	SIGNAL DIODE-1N4148 75MA 75V TR	120-0414801
D9	SIGNAL DIODE-1N4148 75MA 75V TR	120-0414801
D10	3V9 5% 400MW ZENER DIODE TR	125-0039501
D11	DIODE-BYV95A (PHILIPS) TR	120-0009511
D12	DIODE-BYV95A (PHILIPS) TR	120-0009511
D13	DIODE-BYW98-50TR	120-0009801
D14	DIODE-BYW98-50TR	120-0009801
D15	DIODE-1N4007 TR	120-0400701
D16	DIODE-1N4007 TR	120-0400701
D17	DIODE-1N4007 TR	120-0400701
D18	9V1 5% 1.3W ZENER DIODE TR	125-0091531
D19	SIGNAL DIODE-1N4148 75MA 75V TR	120-0414801
D20	9V1 5% 400MW ZENER DIODE TR	125-0091501
D21	9V1 5% 400MW ZENER DIODE TR	125-0091501
D25	SIGNAL DIODE-1N4148 75MA 75V TR	120-0414801
D100	DIODE-1N4007 TR	120-0400701
D101	9V1 5% 400MW ZENER DIODE TR	125-0091501
D102	9V1 5% 400MW ZENER DIODE TR	125-0091501
D103	SMD DIODE-BB619 MINI PLAST (TRS))	912-0061901
D104	SIGNAL DIODE-1N4148 75MA 75V TR	120-0414801
D105	SIGNAL DIODE-1N4148 75MA 75V TR	120-0414801
D106	9V1 5% 400MW ZENER DIODE TR	125-0091501
D107	9V1 5% 400MW ZENER DIODE TR	125-0091501
D108	4V7 5% 400MW ZENER DIODE TR	125-0047501
D200	DIODE-1N4007 TR	120-0400701
D201	9V1 5% 400MW ZENER DIODE TR	125-0091501
D202	9V1 5% 400MW ZENER DIODE TR	125-0091501
D203	SMD DIODE-BB619 MINI PLAST (TRS))	912-0061901
D204	SIGNAL DIODE-1N4148 75MA 75V TR	120-0414801
D205	SIGNAL DIODE-1N4148 75MA 75V TR	120-0414801
D206	9V1 5% 400MW ZENER DIODE TR	125-0091501
D207	9V1 5% 400MW ZENER DIODE TR	125-0091501
D208	4V7 5% 400MW ZENER DIODE TR	125-0047501
D301	9V1 5% 400MW ZENER DIODE TR	125-0091501
D302	9V1 5% 400MW ZENER DIODE TR	125-0091501
D303	SMD DIODE-BB619 MINI PLAST (TRS))	912-0061901
D304	SIGNAL DIODE-1N4148 75MA 75V TR	120-0414801
D305	SIGNAL DIODE-1N4148 75MA 75V TR	120-0414801
D306	9V1 5% 400MW ZENER DIODE TR	125-0091501
D307	9V1 5% 400MW ZENER DIODE TR	125-0091501
D308	4V7 5% 400MW ZENER DIODE TR	125-0047501
D401	9V1 5% 400MW ZENER DIODE TR	125-0091501
D402	9V1 5% 400MW ZENER DIODE TR	125-0091501
D403	SMD DIODE-BB619 MINI PLAST (TRS))	912-0061901
D404	SIGNAL DIODE-1N4148 75MA 75V TR	120-0414801
D405	SIGNAL DIODE-1N4148 75MA 75V TR	120-0414801
D406	9V1 5% 400MW ZENER DIODE TR	125-0091501
D407	9V1 5% 400MW ZENER DIODE TR	125-0091501
D408	4V7 5% 400MW ZENER DIODE TR	125-0047501

Inductances

L1	INDUCTOR-1A 100UH (TDK TSL1110-101K1RO)	131-1000500
L2	INDUCTOR-1A 100UH (TDK TSL1110-101K1RO)	131-1000500
L3	INDUCTOR-1A 100UH (TDK TSL1110-101K1RO)	131-1000500
L4	15UH 5% AXIAL INDUCTORTR	130-0150501
L5	AXIAL INDUCTOR-82UH5% TR	130-0820501
L6	INDUCTOR-1A 100UH (TDK TSL1110-101K1RO)	131-1000500
L100	AXIAL INDUCTOR-27UH5% TR	130-0270501
L101	AXIAL INDUCTOR-47UH5% TR	130-0470501
L102	TINNED COPPER WIRE LINKS 0.61MM DIA.(TRS	999-1099901
L104	TINNED COPPER WIRE LINKS 0.61MM DIA.(TRS	999-1099901
L105	10.7MHZ +-3% ADJ COILTYPE FH-7	133-2868704
L106	10.7MHZ +-3% ADJ COILTYPE FH-7	133-2868704
L107	10.7MHZ +-3% ADJ COILTYPE FH-7	133-2868704
L108	2U2H 5% AXIAL INDUCTORTR	130-0022501
L200	AXIAL INDUCTOR-27UH5% TR	130-0270501
L201	AXIAL INDUCTOR-47UH5% TR	130-0470501
L202	TINNED COPPER WIRE LINKS 0.61MM DIA.(TRS	999-1099901
L204	TINNED COPPER WIRE LINKS 0.61MM DIA.(TRS	999-1099901
L205	10.7MHZ +-3% ADJ COILTYPE FH-7	133-2868704
L206	10.7MHZ +-3% ADJ COILTYPE FH-7	133-2868704
L207	10.7MHZ +-3% ADJ COILTYPE FH-7	133-2868704
L208	2U2H 5% AXIAL INDUCTORTR	130-0022501

L300	AXIAL INDUCTOR-27UH5% TR	130-0270501
L301	AXIAL INDUCTOR-47UH5% TR	130-0470501
L302	TINNED COPPER WIRE LINKS 0.61MM DIA.(TRS	999-1099901
L304	TINNED COPPER WIRE LINKS 0.61MM DIA.(TRS	999-1099901
L305	10.7MHZ +-3% ADJ COILTYPE FH-7	133-2868704
L306	10.7MHZ +-3% ADJ COILTYPE FH-7	133-2868704
L307	10.7MHZ +-3% ADJ COILTYPE FH-7	133-2868704
L308	2U2H 5% AXIAL INDUCTORTR	130-0022501
L400	AXIAL INDUCTOR-27UH5% TR	130-0270501
L401	AXIAL INDUCTOR-47UH5% TR	130-0470501
L402	TINNED COPPER WIRE LINKS 0.61MM DIA.(TRS	999-1099901
L404	TINNED COPPER WIRE LINKS 0.61MM DIA.(TRS	999-1099901
L405	10.7MHZ +-3% ADJ COILTYPE FH-7	133-2868704
L406	10.7MHZ +-3% ADJ COILTYPE FH-7	133-2868704
L407	10.7MHZ +-3% ADJ COILTYPE FH-7	133-2868704
L408	2U2H 5% AXIAL INDUCTORTR	130-0022501

Wire Links

LK1-287	TINNED COPP. WIRE LINKS 0.61MM DIA.(TRS)	999-1099901

Connectors

PL100	PIN HEADER-3 WAY 0.1 PITCH TIN	161-1000300
PL200	PIN HEADER-3 WAY 0.1 PITCH TIN	161-1000300
PL300	PIN HEADER-3 WAY 0.1 PITCH TIN	161-1000300
PL400	PIN HEADER-3 WAY 0.1 PITCH TIN	161-1000300
SK1	*A* LEONHARDY 07-78.2300 MAINS INPUT SKT	875-0778231
SK2	PHONO SOCKET-DUAL (JALCO YKC21-0061)	165-2000201
SK100	SCART SOCKET-MKF6341 (NO LUGS)	163-2102112
SK200	SCART SOCKET-MKF6341 (NO LUGS)	163-2102112
SK300	SCART SOCKET-MKF6341 (NO LUGS)	163-2102112
SK400	SCART SOCKET-MKF6341 (NO LUGS)	163-2102112

Transistors

Q1	TRANSISTOR-MJE 18004 (MOTOROLA)	110-1800401
Q2	TRANSISTOR-ZVN3306A FET TO-92 PACKAGE	110-0330601
Q3	TRANSISTOR-BC557 PNP TO-92 PACKAGETR	110-0055701
Q4	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q5	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q6	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q7	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q8	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q100	TRANSISTOR-ZVN3306A FET TO-92 PACKAGE	110-0330601
Q101	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q102	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q103	TRANSISTOR-BC557 PNP TO-92 PACKAGE TR	110-0055701
Q104	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q105	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q106	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q107	TRANSISTOR-BC557 PNP TO-92 PACKAGE TR	110-0055701
Q108	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q109	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q110	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q111	TRANSISTOR-BC557 PNP TO-92 PACKAGE TR	110-0055701
Q112	TRANSISTOR-BC557 PNP TO-92 PACKAGET R	110-0055701
Q113	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q114	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q115	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q116	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q118	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q119	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q200	TRANSISTOR-ZVN3306A FET TO-92 PACKAGE	110-0330601
Q201	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q202	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q203	TRANSISTOR-BC557 PNP TO-92 PACKAGE TR	110-0055701
Q204	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q205	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q206	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q207	TRANSISTOR-BC557 PNP TO-92 PACKAGE TR	110-0055701
Q208	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q209	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q210	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q211	TRANSISTOR-BC557 PNP TO-92 PACKAGE TR	110-0055701
Q212	TRANSISTOR-BC557 PNP TO-92 PACKAGE TR	110-0055701
Q213	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q214	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q215	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q216	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q218	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q219	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q300	TRANSISTOR-ZVN3306A FET TO-92 PACKAGE	110-0330601
Q301	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q302	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q303	TRANSISTOR-BC557 PNP TO-92 PACKAGE TR	110-0055701
Q304	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q305	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q306	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q307	TRANSISTOR-BC557 PNP TO-92 PACKAGE TR	110-0055701
Q308	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q309	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q310	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q311	TRANSISTOR-BC557 PNP TO-92 PACKAGE TR	110-0055701
Q312	TRANSISTOR-BC557 PNP TO-92 PACKAGE TR	110-0055701
Q313	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q314	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q315	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q316	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q318	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q319	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q400	TRANSISTOR-ZVN3306A FET TO-92 PACKAGE	110-0330601
Q401	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q402	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q403	TRANSISTOR-BC557 PNP TO-92 PACKAGE TR	110-0055701
Q404	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q405	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q406	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q407	TRANSISTOR-BC557 PNP TO-92 PACKAGE TR	110-0055701
Q408	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q409	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q410	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q411	TRANSISTOR-BC557 PNP TO-92 PACKAGE TR	110-0055701
Q412	TRANSISTOR-BC557 PNP TO-92 PACKAGE TR	110-0055701
Q413	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q414	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q415	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q416	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q418	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q419	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701

Resistors

R1	10R 2W 10% METOX NON-SPIRAL RES	143-1007621
R2	100K 2W 5% METAL FILM RES TR	142-1046511
R3	2K2 2W 5% METAL FILM RES TR	142-2226511
R4	1K 5W 10% AX/PLUG CER CASE RES	145-1029600
R5	SMD 220R 0.1W 5% RES 0805 (TRS)	940-2210501
R6	1R 1WATT 5% METOX NON-SPIRAL RES	143-0106521
R7	SMD 4K7 0.1W 5% RES 0805 (TRS)	940-4720501
R8	SMD 1K 0.1W 1% RES 0805 (TRS)	940-1020101
R9	15R 0.25W 5% CARBON FILM RES TR	140-1502501
R10	SMD 2K 0.1W 1% RES 0805 (TRS)	940-2020101
R11	SMD 22K 0.1W 5% RES 0805 (TRS)	940-2230501
R12	SMD 47K 0.1W 5% RES 0805 (TRS)	940-4730501
R13	100R 0.25W 5% CARBON FILM RES TR	140-1012501
R14	15R 0.25W 5% CARBON FILM RES TR	140-1502501
R15	68R 0.25W 5% CARBON FILM RES TR	140-6802501

R16	SMD 22K 0.1W 5% RES 0805 (TRS)	940-2230501
R17	4R7 0.25W 5% CARBON FILM RES TR	140-0472501
R18	470R 0.25W 1% METAL FILM RES	141-4712101
R19	470R 0.25W 1% METAL FILM RES	141-4712101
R20	*A* 10M 0.5W VR37 METAL FILM RES (TR)	142-1065511
R21	SMD 15K 0.1W 5% RES 0805 (TRS)	940-1530501
R22	TINNED COPPER WIRE LINKS 0.61MM DIA.(TRS	999-1099901
R23	SMD 2K7 0.1W 5% RES 0805 (TRS)	940-2720501
R24	SMD 2K2 0.1W 5% RES 0805 (TRS)	940-2220501
R25	SMD 1K5 0.1W 5% RES 0805 (TRS)	940-1520501
R26	SMD 3K3 0.1W 5% RES 0805 (TRS)	940-3320501
R27	SMD 3K3 0.1W 5% RES 0805 (TRS)	940-3320501
R28	SMD 1K2 0.1W 5% RES 0805 (TRS)	940-1220501
R29	SMD 2K2 0.1W 5% RES 0805 (TRS)	940-2220501
R30	SMD 1K2 0.1W 5% RES 0805 (TRS)	940-1220501
R31	SMD 2K49 0.1W 1% RES 0805 (TRS)	940-2490191
R32	SMD 1K8 0.1W 5% RES 0805 (TRS)	940-1820501
R33	SMD 2K49 0.1W 1% RES 0805 (TRS)	940-2490191
R34	SMD 2K2 0.1W 5% RES 0805 (TRS)	940-2220501
R35	SMD 1K5 0.1W 5% RES 0805 (TRS)	940-1520501
R36	SMD 4K7 0.1W 5% RES 0805 (TRS)	940-4720501
R37	SMD 4K7 0.1W 5% RES 0805 (TRS)	940-4720501
R38	SMD 1K5 0.1W 5% RES 0805 (TRS)	940-1520501
R39	SMD 470R 0.1W 5% RES 0805 (TRS)	940-4710501
R40	SMD 68K 0.1W 5% RES 0805 (TRS)	940-6830501
R41	SMD 680R 0.1W 5% RES 0805 (TRS)	940-6810501
R42	SMD 1K5 0.1W 5% RES 0805 (TRS)	940-1520501
R43	SMD 1K8 0.1W 5% RES 0805 (TRS)	940-1820501
R44	SMD 1K5 0.1W 5% RES 0805 (TRS)	940-1520501
R46	SMD 4K3 0.1W 1% RES 0805 (TRS)	940-4320101
R47	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R48	SMD 2K7 0.1W 5% RES 0805 (TRS)	940-2720501
R49	SMD 2K7 0.1W 5% RES 0805 (TRS)	940-2720501
R50	SMD 2K7 0.1W 5% RES 0805 (TRS)	940-2720501
R51	SMD 100K 0.1W 5% RES 0805 (TRS)	940-1040501
R52	SMD 2K7 0.1W 5% RES 0805 (TRS)	940-2720501
R53	SMD 4K7 0.1W 5% RES 0805 (TRS)	940-4720501
R54	SMD 470K 0.1W 5% RES 0805 (TRS)	940-4740501
R55	SMD 100K 0.1W 5% RES 0805 (TRS)	940-1040501
R56	SMD 470R 0.1W 5% RES 0805 (TRS)	940-4710501
R57	SMD 3K3 0.1W 1% RES 0805 (TRS)	940-3320101
R58	SMD 2K2 0.1W 5% RES 0805 (TRS)	940-2220501
R59	SMD 4K7 0.1W 5% RES 0805 (TRS)	940-4720501
R60	SMD 2K7 0.1W 5% RES 0805 (TRS)	940-2720501
R61	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R62	SMD 8K2 0.1W 5% RES 0805 (TRS)	940-8220501
R63	SMD 1K 0.1W 5% RES 0805 (TRS)	940-1020501
R64	SMD 1K 0.1W 5% RES 0805 (TRS)	940-1020501
R65	SMD 56R 0.1W 5% RES 0805 (TRS)	940-5600501
R67	SMD 2K2 0.1W 5% RES 0805 (TRS)	940-2220501
R68	SMD 2K2 0.1W 5% RES 0805 (TRS)	940-2220501
R69	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R70	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R71	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R72	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R73	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R74	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R75	SMD 4K7 0.1W 5% RES 0805 (TRS)	940-4720501
R76	SMD 4K7 0.1W 5% RES 0805 (TRS)	940-4720501
R77	SMD 4K7 0.1W 5% RES 0805 (TRS)	940-4720501
R79	SMD 4K7 0.1W 5% RES 0805 (TRS)	940-4720501
R80	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R81	SMD 4K7 0.1W 5% RES 0805 (TRS)	940-4720501
R82	SMD 270R 0.1W 5% RES 0805 (TRS)	940-2710501
R83	SMD 4K7 0.1W 5% RES 0805 (TRS)	940-4720501
R84	SMD 4K7 0.1W 5% RES 0805 (TRS)	940-4720501
R85	SMD 4K7 0.1W 5% RES 0805 (TRS)	940-4720501
R86	SMD 4K7 0.1W 5% RES 0805 (TRS)	940-4720501
R87	SMD 560R 0.1W 5% RES 0805 (TRS)	940-5610501
R88	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R89	SMD 560R 0.1W 5% RES 0805 (TRS)	940-5610501
R90	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R91	SMD 4K7 0.1W 5% RES 0805 (TRS)	940-4720501
R92	SMD 4K7 0.1W 5% RES 0805 (TRS)	940-4720501
R93	SMD 470R 0.1W 5% RES 0805 (TRS)	940-4710501
R94	SMD 4K7 0.1W 5% RES 0805 (TRS)	940-4720501
R95	SMD 8K2 0.1W 5% RES 0805 (TRS)	940-8220501
R100	SMD 100K 0.1W 5% RES 0805 (TRS)	940-1040501
R101	SMD 82K 0.1W 5% RES 0805 (TRS)	940-8230501
R102	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R103	SMD 5K6 0.1W 1% RES 0805 (TRS)	940-5620101
R104	SMD 2K2 0.1W 5% RES 0805 (TRS)	940-2220501
R105	SMD 2K2 0.1W 5% RES 0805 (TRS)	940-2220501
R106	SMD 75R 0.1W 5% RES 0805 (TRS)	940-7500501
R107	SMD 100R 0.1W 5% RES 0805 (TRS)	940-1010501
R108	SMD 75R 0.1W 5% RES 0805 (TRS)	940-7500501
R109	SMD 680R 0.1W 5% RES 0805 (TRS)	940-6810501
R110	SMD 1K 0.1W 5% RES 0805 (TRS)	940-1020501
R111	SMD 1M 0.1W 5% RES 0805 (TRS)	940-1050501
R112	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R113	SMD 470R 0.1W 5% RES 0805 (TRS)	940-4710501
R114	SMD 100R 0.1W 5% RES 0805 (TRS)	940-1010501
R115	SMD 2K7 0.1W 5% RES 0805 (TRS)	940-2720501
R116	SMD 910R 0.1W 5% RES 0805 (TRS)	940-9110501
R117	SMD 270R 0.1W 5% RES 0805 (TRS)	940-2710501
R118	SMD 1K 0.1W 1% RES 0805 (TRS)	940-1020101
R119	SMD 270R 0.1W 1% RES 0805 TR	940-2710101
R120	SMD 1K 0.1W 5% RES 0805 (TRS)	940-1020501
R121	SMD 750R 0.1W 1% RES 0805 TR	940-7510101
R122	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R123	SMD 270R 0.1W 5% RES 0805 (TRS)	940-2710501
R124	SMD 1K 0.1W 5% RES 0805 (TRS)	940-1020501
R125	SMD 1K 0.1W 5% RES 0805 (TRS)	940-1020501
R126	SMD 270R 0.1W 5% RES 0805 (TRS)	940-2710501
R127	SMD 270K 0.1W 5% RES 0805 (TRS)	940-2740501
R128	SMD 470R 0.1W 5% RES 0805 (TRS)	940-4710501
R129	SMD 4K7 0.1W 5% RES 0805 (TRS)	940-4720501
R130	SMD 3K9 0.1W 5% RES 0805 (TRS)	940-3920501
R131	SMD 12K 0.1W 5% RES 0805 (TRS)	940-1230501
R132	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R133	SMD 2K7 0.1W 5% RES 0805 (TRS)	940-2720501
R134	SMD 100R 0.1W 5% RES 0805 (TRS)	940-1010501
R135	SMD 470R 0.1W 5% RES 0805 (TRS)	940-4710501
R136	SMD 470R 0.1W 5% RES 0805 (TRS)	940-4710501
R137	SMD 560R 0.1W 5% RES 0805 (TRS)	940-5610501
R139	SMD 180R 0.1W 5% RES 0805 (TRS)	940-1810501
R141	SMD 220R 0.1W 5% RES 0805 (TRS)	940-2210501
R142	SMD 100R 0.1W 5% RES 0805 (TRS)	940-1010501
R143	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R144	SMD 1K8 0.1W 5% RES 0805 (TRS)	940-1820501
R145	SMD 1K 0.1W 5% RES 0805 (TRS)	940-1020501
R146	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R147	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R148	SMD 4K7 0.1W 5% RES 0805 (TRS)	940-4720501
R149	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R150	SMD 1K 0.1W 5% RES 0805 (TRS)	940-1020501
R151	SMD 680R 0.1W 5% RES 0805 (TRS)	940-6810501
R152	SMD 680R 0.1W 5% RES 0805 (TRS)	940-6810501
R153	SMD 680R 0.1W 5% RES 0805 (TRS)	940-6810501
R154	SMD 0.1W 5% ZEROHM LINK-0805 (TRS)	940-0000501
R155	SMD 470R 0.1W 5% RES 0805 (TRS)	940-4710501
R158	SMD 4K7 0.1W 5% RES 0805 (TRS)	940-4720501
R159	SMD 470R 0.1W 5% RES 0805 (TRS)	940-4710501
R160	SMD 470R 0.1W 5% RES 0805 (TRS)	940-4710501
R161	SMD 390R 0.1W 5% RES 0805 (TRS)	940-3910501
R162	SMD 15K 0.1W 5% RES 0805 (TRS)	940-1530501
R163	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R164	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501

R165	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R166	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R167	SMD 47K 0.1W 5% RES 0805 (TRS)	940-4730501
R168	SMD 4K7 0.1W 5% RES 0805 (TRS)	940-4720501
R169	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R170	SMD 56K 0.1W 5% RES 0805 (TRS)	940-5630501
R172	SMD 100K 0.1W 5% RES 0805 (TRS)	940-1040501
R173	SMD 1K 0.1W 5% RES 0805 (TRS)	940-1020501
R174	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R175	SMD 47K 0.1W 5% RES 0805 (TRS)	940-4730501
R176	SMD 4M7 0.1W 5% RES 0805 (TRS)	940-4750501
R177	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R178	SMD 330K 0.1W 5% RES 0805 (TRS)	940-3340501
R179	SMD 470K 0.1W 5% RES 0805 (TRS)	940-4740501
R180	SMD 1K 0.1W 5% RES 0805 (TRS)	940-1020501
R181	SMD 4K7 0.1W 5% RES 0805 (TRS)	940-4720501
R182	SMD 390R 0.1W 5% RES 0805 (TRS)	940-3910501
R184	SMD 1K 0.1W 5% RES 0805 (TRS)	940-1020501
R185	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R186	SMD 15K 0.1W 5% RES 0805 (TRS)	940-1530501
R187	SMD 1K 0.1W 5% RES 0805 (TRS)	940-1020501
R188	SMD 4K7 0.1W 5% RES 0805 (TRS)	940-4720501
R189	SMD 0.1W 5% ZEROHM LINK-0805 (TRS)	940-0000501
R190	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R191	SMD 1K2 0.1W 5% RES 0805 (TRS)	940-1220501
R192	SMD 4K7 0.1W 5% RES 0805 (TRS)	940-4720501
R193	SMD 6K8 0.1W 5% RES 0805 (TRS)	940-6820501
R194	SMD 1K 0.1W 5% RES 0805 (TRS)	940-1020501
R195	SMD 22K 0.1W 5% RES 0805 (TRS)	940-2230501
R197	SMD 1M 0.1W 5% RES 0805 (TRS)	940-1050501
R198	SMD 2K7 0.1W 1% RES 0805 (TRS)	940-2720101
R199	SMD 1K8 0.1W 1% RES 0805 (TRS)	940-1820101
R200	SMD 100K 0.1W 5% RES 0805 (TRS)	940-1040501
R201	SMD 82K 0.1W 5% RES 0805 (TRS)	940-8230501
R202	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R203	SMD 5K6 0.1W 1% RES 0805 (TRS)	940-5620101
R204	SMD 2K2 0.1W 5% RES 0805 (TRS)	940-2220501
R205	SMD 2K2 0.1W 5% RES 0805 (TRS)	940-2220501
R206	SMD 75R 0.1W 5% RES 0805 (TRS)	940-7500501
R207	SMD 100R 0.1W 5% RES 0805 (TRS)	940-1010501
R208	SMD 75R 0.1W 5% RES 0805 (TRS)	940-7500501
R209	SMD 680R 0.1W 5% RES 0805 (TRS)	940-6810501
R210	SMD 1K 0.1W 5% RES 0805 (TRS)	940-1020501
R211	SMD 1M 0.1W 5% RES 0805 (TRS)	940-1050501
R212	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R213	SMD 470R 0.1W 5% RES 0805 (TRS)	940-4710501
R214	SMD 100R 0.1W 5% RES 0805 (TRS)	940-1010501
R215	SMD 2K7 0.1W 5% RES 0805 (TRS)	940-2720501
R216	SMD 910R 0.1W 5% RES 0805 (TRS)	940-9110501
R217	SMD 270R 0.1W 5% RES 0805 (TRS)	940-2710501
R218	SMD 1K 0.1W 1% RES 0805 (TRS)	940-1020101
R219	SMD 270R 0.1W 1% RES 0805 TR	940-2710101
R220	SMD 1K 0.1W 5% RES 0805 (TRS)	940-1020501
R221	SMD 750R 0.1W 1% RES 0805 TR	940-7510101
R222	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R223	SMD 270R 0.1W 5% RES 0805 (TRS)	940-2710501
R224	SMD 1K 0.1W 5% RES 0805 (TRS)	940-1020501
R225	SMD 1K 0.1W 5% RES 0805 (TRS)	940-1020501
R226	SMD 270R 0.1W 5% RES 0805 (TRS)	940-2710501
R227	SMD 270K 0.1W 5% RES 0805 (TRS)	940-2740501
R228	SMD 470R 0.1W 5% RES 0805 (TRS)	940-4710501
R229	SMD 4K7 0.1W 5% RES 0805 (TRS)	940-4720501
R230	SMD 3K9 0.1W 5% RES 0805 (TRS)	940-3920501
R231	SMD 12K 0.1W 5% RES 0805 (TRS)	940-1230501
R232	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R233	SMD 2K7 0.1W 5% RES 0805 (TRS)	940-2720501
R234	SMD 100R 0.1W 5% RES 0805 (TRS)	940-1010501
R235	SMD 470R 0.1W 5% RES 0805 (TRS)	940-4710501
R236	SMD 470R 0.1W 5% RES 0805 (TRS)	940-4710501
R237	SMD 560R 0.1W 5% RES 0805 (TRS)	940-5610501
R239	SMD 180R 0.1W 5% RES 0805 (TRS)	940-1810501
R241	SMD 220R 0.1W 5% RES 0805 (TRS)	940-2210501
R242	SMD 100R 0.1W 5% RES 0805 (TRS)	940-1010501
R243	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R244	SMD 1K8 0.1W 5% RES 0805 (TRS)	940-1820501
R245	SMD 1K 0.1W 5% RES 0805 (TRS)	940-1020501
R246	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R247	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R248	SMD 4K7 0.1W 5% RES 0805 (TRS)	940-4720501
R249	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R250	SMD 1K 0.1W 5% RES 0805 (TRS)	940-1020501
R251	SMD 680R 0.1W 5% RES 0805 (TRS)	940-6810501
R252	SMD 680R 0.1W 5% RES 0805 (TRS)	940-6810501
R253	SMD 680R 0.1W 5% RES 0805 (TRS)	940-6810501
R254	SMD 0.1W 5% ZEROHM LINK-0805 (TRS)	940-0000501
R255	SMD 470R 0.1W 5% RES 0805 (TRS)	940-4710501
R259	SMD 470R 0.1W 5% RES 0805 (TRS)	940-4710501
R260	SMD 470R 0.1W 5% RES 0805 (TRS)	940-4710501
R261	SMD 390R 0.1W 5% RES 0805 (TRS)	940-3910501
R262	SMD 15K 0.1W 5% RES 0805 (TRS)	940-1530501
R263	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R264	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R265	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R266	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R267	SMD 47K 0.1W 5% RES 0805 (TRS)	940-4730501
R268	SMD 4K7 0.1W 5% RES 0805 (TRS)	940-4720501
R269	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R270	SMD 56K 0.1W 5% RES 0805 (TRS)	940-5630501
R272	SMD 100K 0.1W 5% RES 0805 (TRS)	940-1040501
R273	SMD 1K 0.1W 5% RES 0805 (TRS)	940-1020501
R274	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R275	SMD 47K 0.1W 5% RES 0805 (TRS)	940-4730501
R276	SMD 4M7 0.1W 5% RES 0805 (TRS)	940-4750501
R277	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R278	SMD 330K 0.1W 5% RES 0805 (TRS)	940-3340501
R280	SMD 1K 0.1W 5% RES 0805 (TRS)	940-1020501
R281	SMD 4K7 0.1W 5% RES 0805 (TRS)	940-4720501
R282	SMD 390R 0.1W 5% RES 0805 (TRS)	940-3910501
R284	SMD 1K 0.1W 5% RES 0805 (TRS)	940-1020501
R285	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R286	SMD 15K 0.1W 5% RES 0805 (TRS)	940-1530501
R287	SMD 1K 0.1W 5% RES 0805 (TRS)	940-1020501
R288	SMD 4K7 0.1W 5% RES 0805 (TRS)	940-4720501
R289	SMD 0.1W 5% ZEROHM LINK-0805 (TRS)	940-0000501
R290	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R291	SMD 1K2 0.1W 5% RES 0805 (TRS)	940-1220501
R292	SMD 4K7 0.1W 5% RES 0805 (TRS)	940-4720501
R293	SMD 6K8 0.1W 5% RES 0805 (TRS)	940-6820501
R294	SMD 1K 0.1W 5% RES 0805 (TRS)	940-1020501
R295	SMD 22K 0.1W 5% RES 0805 (TRS)	940-2230501
R297	SMD 1M 0.1W 5% RES 0805 (TRS)	940-1050501
R298	SMD 2K7 0.1W 1% RES 0805 (TRS)	940-2720101
R299	SMD 1K8 0.1W 1% RES 0805 (TRS)	940-1820101
R300	SMD 100K 0.1W 5% RES 0805 (TRS)	940-1040501
R301	SMD 82K 0.1W 5% RES 0805 (TRS)	940-8230501
R302	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R303	SMD 5K6 0.1W 1% RES 0805 (TRS)	940-5620101
R304	SMD 2K2 0.1W 5% RES 0805 (TRS)	940-2220501
R305	SMD 2K2 0.1W 5% RES 0805 (TRS)	940-2220501
R306	SMD 75R 0.1W 5% RES 0805 (TRS)	940-7500501
R307	SMD 100R 0.1W 5% RES 0805 (TRS)	940-1010501
R308	SMD 75R 0.1W 5% RES 0805 (TRS)	940-7500501
R309	SMD 680R 0.1W 5% RES 0805 (TRS)	940-6810501
R310	SMD 1K 0.1W 5% RES 0805 (TRS)	940-1020501
R311	SMD 1M 0.1W 5% RES 0805 (TRS)	940-1050501
R312	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R313	SMD 470R 0.1W 5% RES 0805 (TRS)	940-4710501
R314	SMD 100R 0.1W 5% RES 0805 (TRS)	940-1010501

R315	SMD 2K7 0.1W 5% RES 0805 (TRS)	940-2720501
R316	SMD 910R 0.1W 5% RES 0805 (TRS)	940-9110501
R317	SMD 270R 0.1W 5% RES 0805 (TRS)	940-2710501
R318	SMD 1K 0.1W 1% RES 0805 (TRS)	940-1020101
R319	SMD 270R 0.1W 1% RES 0805 TR	940-2710101
R320	SMD 1K 0.1W 5% RES 0805 (TRS)	940-1020501
R321	SMD 750R 0.1W 1% RES 0805 TR	940-7510101
R322	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R323	SMD 270R 0.1W 5% RES 0805 (TRS)	940-2710501
R324	SMD 1K 0.1W 5% RES 0805 (TRS)	940-1020501
R325	SMD 1K 0.1W 5% RES 0805 (TRS)	940-1020501
R326	SMD 270R 0.1W 5% RES 0805 (TRS)	940-2710501
R327	SMD 270K 0.1W 5% RES 0805 (TRS)	940-2740501
R328	SMD 470R 0.1W 5% RES 0805 (TRS)	940-4710501
R329	SMD 4K7 0.1W 5% RES 0805 (TRS)	940-4720501
R330	SMD 3K9 0.1W 5% RES 0805 (TRS)	940-3920501
R331	SMD 12K 0.1W 5% RES 0805 (TRS)	940-1230501
R332	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R333	SMD 2K7 0.1W 5% RES 0805 (TRS)	940-2720501
R334	SMD 100R 0.1W 5% RES 0805 (TRS)	940-1010501
R335	SMD 470R 0.1W 5% RES 0805 (TRS)	940-4710501
R336	SMD 470R 0.1W 5% RES 0805 (TRS)	940-4710501
R337	SMD 560R 0.1W 5% RES 0805 (TRS)	940-5610501
R339	SMD 180R 0.1W 5% RES 0805 (TRS)	940-1810501
R341	SMD 220R 0.1W 5% RES 0805 (TRS)	940-2210501
R342	SMD 100R 0.1W 5% RES 0805 (TRS)	940-1010501
R343	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R344	SMD 1K8 0.1W 5% RES 0805 (TRS)	940-1820501
R345	SMD 1K 0.1W 5% RES 0805 (TRS)	940-1020501
R346	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R347	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R348	SMD 4K7 0.1W 5% RES 0805 (TRS)	940-4720501
R349	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R350	SMD 1K 0.1W 5% RES 0805 (TRS)	940-1020501
R351	SMD 680R 0.1W 5% RES 0805 (TRS)	940-6810501
R352	SMD 680R 0.1W 5% RES 0805 (TRS)	940-6810501
R353	SMD 680R 0.1W 5% RES 0805 (TRS)	940-6810501
R354	SMD 0.1W 5% ZEROHM LINK-0805 (TRS)	940-0000501
R355	SMD 470R 0.1W 5% RES 0805 (TRS)	940-4710501
R359	SMD 470R 0.1W 5% RES 0805 (TRS)	940-4710501
R360	SMD 470R 0.1W 5% RES 0805 (TRS)	940-4710501
R361	SMD 390R 0.1W 5% RES 0805 (TRS)	940-3910501
R362	SMD 15K 0.1W 5% RES 0805 (TRS)	940-1530501
R363	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R364	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R365	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R366	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R367	SMD 47K 0.1W 5% RES 0805 (TRS)	940-4730501
R368	SMD 4K7 0.1W 5% RES 0805 (TRS)	940-4720501
R369	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R370	SMD 56K 0.1W 5% RES 0805 (TRS)	940-5630501
R372	SMD 100K 0.1W 5% RES 0805 (TRS)	940-1040501
R373	SMD 1K 0.1W 5% RES 0805 (TRS)	940-1020501
R374	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R375	SMD 47K 0.1W 5% RES 0805 (TRS)	940-4730501
R376	SMD 4M7 0.1W 5% RES 0805 (TRS)	940-4750501
R377	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R378	SMD 330K 0.1W 5% RES 0805 (TRS)	940-3340501
R379	SMD 470K 0.1W 5% RES 0805 (TRS)	940-4740501
R380	SMD 1K 0.1W 5% RES 0805 (TRS)	940-1020501
R381	SMD 4K7 0.1W 5% RES 0805 (TRS)	940-4720501
R382	SMD 390R 0.1W 5% RES 0805 (TRS)	940-3910501
R384	SMD 1K 0.1W 5% RES 0805 (TRS)	940-1020501
R385	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R386	SMD 15K 0.1W 5% RES 0805 (TRS)	940-1530501
R387	SMD 1K 0.1W 5% RES 0805 (TRS)	940-1020501
R388	SMD 4K7 0.1W 5% RES 0805 (TRS)	940-4720501
R389	SMD 0.1W 5% ZEROHM LINK-0805 (TRS)	940-0000501
R390	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R391	SMD 1K2 0.1W 5% RES 0805 (TRS)	940-1220501
R392	SMD 4K7 0.1W 5% RES 0805 (TRS)	940-4720501
R393	SMD 6K8 0.1W 5% RES 0805 (TRS)	940-6820501
R394	SMD 1K 0.1W 5% RES 0805 (TRS)	940-1020501
R395	SMD 22K 0.1W 5% RES 0805 (TRS)	940-2230501
R397	SMD 1M 0.1W 5% RES 0805 (TRS)	940-1050501
R398	SMD 2K7 0.1W 1% RES 0805 (TRS)	940-2720101
R399	SMD 1K8 0.1W 1% RES 0805 (TRS)	940-1820101
R400	SMD 100K 0.1W 5% RES 0805 (TRS)	940-1040501
R401	SMD 82K 0.1W 5% RES 0805 (TRS)	940-8230501
R402	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R403	SMD 5K6 0.1W 1% RES 0805 (TRS)	940-5620101
R404	SMD 2K2 0.1W 5% RES 0805 (TRS)	940-2220501
R405	SMD 2K2 0.1W 5% RES 0805 (TRS)	940-2220501
R406	SMD 75R 0.1W 5% RES 0805 (TRS)	940-7500501
R407	SMD 100R 0.1W 5% RES 0805 (TRS)	940-1010501
R408	SMD 75R 0.1W 5% RES 0805 (TRS)	940-7500501
R409	SMD 680R 0.1W 5% RES 0805 (TRS)	940-6810501
R410	SMD 1K 0.1W 5% RES 0805 (TRS)	940-1020501
R411	SMD 1M 0.1W 5% RES 0805 (TRS)	940-1050501
R412	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R413	SMD 470R 0.1W 5% RES 0805 (TRS)	940-4710501
R414	SMD 100R 0.1W 5% RES 0805 (TRS)	940-1010501
R415	SMD 2K7 0.1W 5% RES 0805 (TRS)	940-2720501
R416	SMD 910R 0.1W 5% RES 0805 (TRS)	940-9110501
R417	SMD 270R 0.1W 5% RES 0805 (TRS)	940-2710501
R418	SMD 1K 0.1W 1% RES 0805 (TRS)	940-1020101
R419	SMD 270R 0.1W 1% RES 0805 TR	940-2710101
R420	SMD 1K 0.1W 5% RES 0805 (TRS)	940-1020501
R421	SMD 750R 0.1W 1% RES 0805 TR	940-7510101
R422	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R423	SMD 270R 0.1W 5% RES 0805 (TRS)	940-2710501
R424	SMD 1K 0.1W 5% RES 0805 (TRS)	940-1020501
R425	SMD 1K 0.1W 5% RES 0805 (TRS)	940-1020501
R426	SMD 270R 0.1W 5% RES 0805 (TRS)	940-2710501
R427	SMD 270K 0.1W 5% RES 0805 (TRS)	940-2740501
R428	SMD 470R 0.1W 5% RES 0805 (TRS)	940-4710501
R429	SMD 4K7 0.1W 5% RES 0805 (TRS)	940-4720501
R430	SMD 3K9 0.1W 5% RES 0805 (TRS)	940-3920501
R431	SMD 12K 0.1W 5% RES 0805 (TRS)	940-1230501
R432	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R433	SMD 2K7 0.1W 5% RES 0805 (TRS)	940-2720501
R434	SMD 100R 0.1W 5% RES 0805 (TRS)	940-1010501
R435	SMD 470R 0.1W 5% RES 0805 (TRS)	940-4710501
R436	SMD 470R 0.1W 5% RES 0805 (TRS)	940-4710501
R437	SMD 560R 0.1W 5% RES 0805 (TRS)	940-5610501
R439	SMD 180R 0.1W 5% RES 0805 (TRS)	940-1810501
R441	SMD 220R 0.1W 5% RES 0805 (TRS)	940-2210501
R442	SMD 100R 0.1W 5% RES 0805 (TRS)	940-1010501
R443	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R444	SMD 1K8 0.1W 5% RES 0805 (TRS)	940-1820501
R445	SMD 1K 0.1W 5% RES 0805 (TRS)	940-1020501
R446	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R447	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R448	SMD 4K7 0.1W 5% RES 0805 (TRS)	940-4720501
R449	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R450	SMD 1K 0.1W 5% RES 0805 (TRS)	940-1020501
R451	SMD 680R 0.1W 5% RES 0805 (TRS)	940-6810501
R452	SMD 680R 0.1W 5% RES 0805 (TRS)	940-6810501
R453	SMD 680R 0.1W 5% RES 0805 (TRS)	940-6810501
R454	SMD 0.1W 5% ZEROHM LINK-0805 (TRS)	940-0000501
R455	SMD 470R 0.1W 5% RES 0805 (TRS)	940-4710501
R458	SMD 4K7 0.1W 5% RES 0805 (TRS)	940-4720501
R459	SMD 470R 0.1W 5% RES 0805 (TRS)	940-4710501
R460	SMD 470R 0.1W 5% RES 0805 (TRS)	940-4710501
R461	SMD 390R 0.1W 5% RES 0805 (TRS)	940-3910501
R462	SMD 15K 0.1W 5% RES 0805 (TRS)	940-1530501
R463	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R464	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501

R465	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R466	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R467	SMD 47K 0.1W 5% RES 0805 (TRS)	940-4730501
R468	SMD 4K7 0.1W 5% RES 0805 (TRS)	940-4720501
R469	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R470	SMD 56K 0.1W 5% RES 0805 (TRS)	940-5630501
R472	SMD 100K 0.1W 5% RES 0805 (TRS)	940-1040501
R473	SMD 1K 0.1W 5% RES 0805 (TRS)	940-1020501
R474	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R475	SMD 47K 0.1W 5% RES 0805 (TRS)	940-4730501
R476	SMD 4M7 0.1W 5% RES 0805 (TRS)	940-4750501
R477	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R478	SMD 330K 0.1W 5% RES 0805 (TRS)	940-3340501
R480	SMD 1K 0.1W 5% RES 0805 (TRS)	940-1020501
R481	SMD 4K7 0.1W 5% RES 0805 (TRS)	940-4720501
R482	SMD 390R 0.1W 5% RES 0805 (TRS)	940-3910501
R484	SMD 1K 0.1W 5% RES 0805 (TRS)	940-1020501
R485	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R486	SMD 15K 0.1W 5% RES 0805 (TRS)	940-1530501
R487	SMD 1K 0.1W 5% RES 0805 (TRS)	940-1020501
R488	SMD 4K7 0.1W 5% RES 0805 (TRS)	940-4720501
R489	SMD 0.1W 5% ZEROHM LINK-0805 (TRS)	940-0000501
R490	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R491	SMD 1K2 0.1W 5% RES 0805 (TRS)	940-1220501
R492	SMD 4K7 0.1W 5% RES 0805 (TRS)	940-4720501
R493	SMD 6K8 0.1W 5% RES 0805 (TRS)	940-6820501
R494	SMD 1K 0.1W 5% RES 0805 (TRS)	940-1020501
R495	SMD 22K 0.1W 5% RES 0805 (TRS)	940-2230501
R497	SMD 1M. 0.1W 5% RES 0805 (TRS)	940-1050501
R498	SMD 2K7 0.1W 1% RES 0805 (TRS)	940-2720101
R499	SMD 1K8 0.1W 1% RES 0805 (TRS)	940-1820101
R501	SMD 560R 0.1W 5% RES 0805 (TRS)	940-5610501
R502	SMD 560R 0.1W 5% RES 0805 (TRS)	940-5610501
R503	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R504	SMD 1K 0.1W 5% RES 0805 (TRS)	940-1020501
R505	SMD 1K 0.1W 5% RES 0805 (TRS)	940-1020501
R506	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R507	SMD 470R 0.1W 5% RES 0805 (TRS)	940-4710501
R508	SMD 4K7 0.1W 5% RES 0805 (TRS)	940-4720501
R509	SMD 560R 0.1W 5% RES 0805 (TRS)	940-5610501
R510	SMD 560R 0.1W 5% RES 0805 (TRS)	940-5610501
R511	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R512	SMD 1K 0.1W 5% RES 0805 (TRS)	940-1020501
R513	SMD 1K 0.1W 5% RES 0805 (TRS)	940-1020501
R514	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R515	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R516	SMD 100K 0.1W 5% RES 0805 (TRS)	940-1040501
R517	SMD 560R 0.1W 5% RES 0805 (TRS)	940-5610501
R518	SMD 560R 0.1W 5% RES 0805 (TRS)	940-5610501
R519	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R520	SMD 1K 0.1W 5% RES 0805 (TRS)	940-1020501
R521	SMD 1K 0.1W 5% RES 0805 (TRS)	940-1020501
R522	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R523	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R524	SMD 100K 0.1W 5% RES 0805 (TRS)	940-1040501
R525	SMD 560R 0.1W 5% RES 0805 (TRS)	940-5610501
R526	SMD 560R 0.1W 5% RES 0805 (TRS)	940-5610501
R527	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R528	SMD 1K 0.1W 5% RES 0805 (TRS)	940-1020501
R529	SMD 1K 0.1W 5% RES 0805 (TRS)	940-1020501
R530	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R531	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R532	SMD 100K 0.1W 5% RES 0805 (TRS)	940-1040501
R533	SMD 560R 0.1W 5% RES 0805 (TRS)	940-5610501
R534	SMD 560R 0.1W 5% RES 0805 (TRS)	940-5610501
R535	SMD 560R 0.1W 5% RES 0805 (TRS)	940-5610501
R536	SMD 560R 0.1W 5% RES 0805 (TRS)	940-5610501
R537	SMD 470K 0.1W 5% RES 0805 (TRS)	940-4740501
R538	68R 0.25W 5% CARBON FILM RES TR	140-6802501

Integrated Circuits

U1	TEA2018 SWITCH MODE PSU (THOMSON)	109-0201801
U2	M50555 001P DISPLAY CONT (MISUBISHI)	109-0505551
U3	HEF4053 TRIPLE 2-CHANNEL MULTIPLEXER	106-0405301
U4	HEF 4052 DUAL 4-CHANNEL MULTIPLEXER	106-0405200
U5	TEA2130 SYNC SEP(DS173019) (THOMSON)	109-0213001
U6	24C16 16K EE (CATALYST)	104-0241601
U9	ULN2003 TRANSISTOR DARLINGTONS	100-0200300
U100	LM7001 FS CHIP (SANYO)	109-0700101
U101	HEF4053 TRIPLE 2-CHANNEL MULTIPLEXER	106-0405301
U102	CD4094BCN 8 BIT SHIFT AND STORE REGISTER	106-0409400
U103	TDA6160 SAT SOUND IF (SIEMENS)	909-0616001
U104	HEF4053 TRIPLE 2-CHANNEL MULTIPLEXER	106-0405301
U105	TL084 QUAD BI-FET OP AMP LOW NOISE	100-0008400
U106	129026 EXPANDER 28 DIL SKDIP	109-1290261
U200	LM7001 FS CHIP (SANYO)	109-0700101
U201	HEF4053 TRIPLE 2-CHANNEL MULTIPLEXER	106-0405301
U202	CD4094BCN 8 BIT SHIFT AND STORE REGISTER	106-0409400
U203	TDA6160 SAT SOUND IF (SIEMENS)	909-0616001
U204	HEF4053 TRIPLE 2-CHANNEL MULTIPLEXER	106-0405301
U300	LM7001 FS CHIP (SANYO)	109-0700101
U301	HEF4053 TRIPLE 2-CHANNEL MULTIPLEXER	106-0405301
U302	CD4094BCN 8 BIT SHIFT AND STORE REGISTER	106-0409400
U303	TDA6160 SAT SOUND IF (SIEMENS)	909-0616001
U304	HEF4053 TRIPLE 2-CHANNEL MULTIPLEXER	106-0405301
U305	TL084 QUAD BI-FET OP AMP LOW NOISE	100-0008400
U306	129026 EXPANDER 28 DIL SKDIP	109-1290261
U400	LM7001 FS CHIP (SANYO)	109-0700101
U401	HEF4053 TRIPLE 2-CHANNEL MULTIPLEXER	106-0405301
U402	CD4094BCN 8 BIT SHIFT AND STORE REGISTER	106-0409400
U403	TDA6160 SAT SOUND IF (SIEMENS)	909-0616001
U404	HEF4053 TRIPLE 2-CHANNEL MULTIPLEXER	106-0405301

Miscellaneous Components

F/A SAMPLE	AXIAL INDUCTOR-47UH 5%TR	130-0470501
F/A SAMPLE	MOD WIRE-0.5 X 35MM RED	190-0503515
F/A SAMPLE	MOD WIRE-0.5 X 90MM RED	190-0509015
F/A SAMPLE	MOD WIRE - 0.5 X 120MM RED	190-0512015
F/A SAMPLE	MOD WIRE-0.5 X 150MM RED TELECIEL	190-0515015
F/A SAMPLE	MOD WIRE - 0.5 X 210MM RED	190-0521015
FIT TO D14	DIODE-BYW98-50TR	120-0009801
FIT TO R194	SMD 47NF50V 10%CERX7R CAP 0805 (TRS)	950-4735621
FIT TO R294	SMD 47NF50V 10%CERX7R CAP0805 (TRS)	950-4735621
FIT TO R394	SMD 47NF50V 10%CERX7R CAP0805 (TRS)	950-4735621
FIT TO R494	SMD 47NF50V 10%CERX7R CAP0805 (TRS)	950-4735621
F/TO C246	SMD 470NF 16V 20/80 CERY5V CAP0805 TRS	950-4741951
FS1	*A* FUSE F1AL 20 X 5MM GLASS FAST BLOWN	201-2521000
IR1	SONY INFRA-RED REC MODULE (SBX 1620-E2)	215-1620002
LED1	LED-GREEN 5MM H/EFFEL333GD	200-0110501
LED2	LED-GREEN 5MM H/EFFEL333GD	200-0110501
MOD100	BSFC77G01 2GHZ S/LNB 'F'TUNER SHARP 22CC	221-2077011
MOD200	BSFC77G01 2GHZ S/LNB 'F'TUNER SHARP 22CC	221-2077011
MOD300	BSFC77G01 2GHZ S/LNB 'F'TUNER SHARP 22CC	221-2077011
MOD400	BSFC77G01 2GHZ S/LNB 'F'TUNER SHARP 22CC	221-2077011
SW1	SWITCH-B3F3152 PCB SUBMIN 150GM (YELL)	204-0315211
T1	MAINS FILTER-(UF2327S-253-YOR5) "TDK"	232-2327000
T2	*A* TRANSFORMER-SM 800 SERIES MANBY	237-0400002
VR100	2K0.5W 10% S/TURN CERMET TRIMMERS	146-2025601
VR200	2K0.5W 10% S/TURN CERMET TRIMMERS	146-2025601
VR300	2K0.5W 10% S/TURN CERMET TRIMMERS	146-2025601
VR400	2K0.5W 10% S/TURN CERMET TRIMMERS	146-2025601
X1	XTAL 17.734MHZ HC49U 20/30/10 10PF PAR	170-0177341
X2	RESONATOR-503KHZ TYPE CSB503F21	171-0005030
X100	XTAL 5.625MHZ HC49U 50/50/10/ 30PF PAR	170-0056250
X101	FILTER-SFE 10.7MJA 10K-A(MURATA)	173-0107003
X102	FILTER-SFE 10.7MJA 10K-A(MURATA)	173-0107003
X103	FILTER-SFE 10.52MJA 10K-A(MURATA)	173-0105203
X104	FILTER-SFE 10.52MJA 10K-A(MURATA)	173-0105203

X105	FILTER-MA5A 10.7MHZ	173-0107051
X201	FILTER-SFE 10.7MJA 10K-A(MURATA)	173-0107003
X202	FILTER-SFE 10.7MJA 10K-A(MURATA)	173-0107003
X203	FILTER-SFE 10.52MJA 10K-A(MURATA)	173-0105203
X204	FILTER-SFE 10.52MJA 10K-A(MURATA)	173-0105203
X205	FILTER-MA5A 10.7MHZ	173-0107051
X300	XTAL 5.625MHZ HC49U 50/50/10/ 30PF PAR	170-0056250
X301	FILTER-SFE 10.7MJA 10K-A(MURATA)	173-0107003
X302	FILTER-SFE 10.7MJA 10K-A(MURATA)	173-0107003
X303	FILTER-SFE 10.52MJA 10K-A(MURATA)	173-0105203
X304	FILTER-SFE 10.52MJA 10K-A(MURATA)	173-0105203
X305	FILTER-MA5A 10.7MHZ	173-0107051
X401	FILTER-SFE 10.7MJA 10K-A(MURATA)	173-0107003
X402	FILTER-SFE 10.7MJA 10K-A(MURATA)	173-0107003
X403	FILTER-SFE 10.52MJA 10K-A(MURATA)	173-0105203
X404	FILTER-SFE 10.52MJA 10K-A(MURATA)	173-0105203
X405	FILTER-MA5A 10.7MHZ	173-0107051

Common Mechanical Parts

1 OFF	*A* MAINS CABLE-EURO "8" + PLUG	191-2015280
4 OFF	PILLAR-TCBS-22.5 V/CRYPT STD/OFF (RICHCO)	248-1601001
7 OFF	PILLAR-RLCBSRE-8-BLACK LOCKING (RICHCO)	248-0801001
2 OFF	PLASTITE SCREW-4 X 1/4 POZI PAN BLACK	245-4140011
3 OFF	SNAP RIVET-SR3555B BLACK PLASTIC RICHCO	247-3555111
1 OFF	COVER-PSM8000 SMATV ISSUE 2	312-8000111
1 OFF	CABLE CLAMP-NE3 4.8MM DIA.	206-0304800
1 OFF	CABLE ASSY -5 WAY 150MM PSM8000 SMATV	266-8015050
1 OFF	CABLE ASSY -7 WAY 180MM PSM8000 SMATV	266-8018070
1 OFF	CABLE ASSY -5 WAY 190MM PSM8000 SMATV	266-8019050
1 OFF	CABLE ASSY -4 WAY 210MM PSM8000 SMATV	266-8021040
1 OFF	CABLE ASSY +PHONO PLUG 2W COAX RF O/P	266-8033020
4 OFF	BUMPON-SJ5003 SMALL BLACK DOME	208-5003010
2 OFF	FULL NUT-M3 PLATED	240-0030001
4 OFF	HALF NUT-3/8 FORM 32 TOI.2A	240-1380011
4 OFF	SELF-TAP SCREW-6 X 5/16 POZI PAN BLACK	244-6560011
12OFF	SCREW M3x8 P/P TAP.C/W WASHER BLK SEAL	246-3080011
2 OFF	M3 SHAKEPROOF WASHER	241-0031001
1 OFF	HANDSET - PSM8000 SMATV UNBRANDED SMK	699-8000000
2 OFF	BATTERY AA	239-0015010

ELECTRICAL PARTS FOR OTP (Z8) BOARD

C3	100NF 50V 5MM M/LAYER CER.CAP TR	157-1045751
C4	100NF 50V 5MM M/LAYER CER.CAP TR	157-1045751
C5	33PF 16V 5MM CERAMIC CAP 10% TR	150-3301651
C6	39PF 16V 5MM CERAMIC CAP 10% TR	150-3901651
FIT TO U4		
	SOCKET-28 PIN IC DIL	209-2002800
FIT TO X1		
	INS.WASHER-FOR HC18/49 (HOLED) XTAL CAN	208-0153000
PL 1	PIN HDR-20 WAY EXTENDED S/ROW(HARWIN)	161-1002001
REV A1	PCB-OTP SMATV SERIES REV A1	182-0222101
U1	SMD IC-Z86C9620VSC ROMLESS Z8	904-0869601
U3	74HC374	102-1037400
U4	EPROM-27256 PACE SMATV (805-8000001)	805-8000001
X1	CRYSTAL-4MHZ HC18U 50/50/-10+60 30PF PAR	170-0040000

ELECTRICAL PARTS FOR MODULATOR BOARD (EMC VERSION)

Capacitors

C1	SMD 10PF 50V 5% CER CAP 0805 (TRS)	950-1005501
C3	SMD 56PF 50V 5% CER COG CAP 0805 (TRS)	950-5605501
C5	SMD 27PF 50V 5% CER COG CAP 0805 (TRS)	950-2705501
C6	SMD 220NF 50V 20/80% CER Y5V CAP 0805 TR	950-2245951
C7	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C8	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C9	1UF 16V 5MM RADIAL ELECT' CAP TR	155-1051751
C10	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C11	SMD 22NF 50V 10% CER.CAP 0805	950-2235601
C12	SMD 220NF 50V 20/80% CER Y5V CAP 0805 TR	950-2245951
C13	SMD 150PF 50V 5% CER COG CAP 0805 (TRS)	950-1515501
C14	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C15	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C16	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C17	SMD 5.6PF 50V +-0.25PF CER COG CAP 0805	950-0565301
C18	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C19	SMD 0.1UF 25V 20/80% CER Y5V CAP 0805 TR	950-1042951
C20	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C21	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C23	SMD 22NF 50V 10% CER.CAP 0805	950-2235601
C24	SMD 22NF 50V 10% CER.CAP 0805	950-2235601
C26	SMD 3.0PF 50V +-0.25PF CER COG CAP 0805	950-0305301
C27	SMD 220PF 50V 5% CER COG CAP 0805 (TRS)	950-2215501
C28	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C29	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C30	SMD 1.5PF 50V +-0.25PF CER COG CAP 0805	950-0155301
C31	SMD 1.5PF 50V +-0.25PF CER COG CAP 0805	950-0155301
C32	SMD 1.5PF 50V +-0.25PF CER COG CAP 0805	950-0155301
C33	SMD 1.5PF 50V +-0.25PF CER COG CAP 0805	950-0155301
C34	SMD 12PF 50V 5% CER COG CAP 0805 (TRS)	950-1205501
C35	SMD 100PF 50V 5% CER COG CAP 0805 (TRS)	950-1015501
C36	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C37	SMD 10PF 50V 5% CER CAP 0805 (TRS)	950-1005501
C39	SMD 56PF 50V 5% CER COG CAP 0805 (TRS)	950-5605501
C41	SMD 27PF 50V 5% CER COG CAP 0805 (TRS)	950-2705501
C42	SMD 220NF 50V 20/80% CER Y5V CAP 0805 TR	950-2245951
C43	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C44	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C45	1UF 16V 5MM RADIAL ELECT' CAP TR	155-1051751
C46	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C47	SMD 22NF 50V 10% CER.CAP 0805	950-2235601
C48	SMD 220NF 50V 20/80% CER Y5V CAP 0805 TR	950-2245951
C49	SMD 150PF 50V 5% CER COG CAP 0805 (TRS)	950-1515501
C50	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C51	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C52	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C53	SMD 3.0PF 50V +-0.25PF CER COG CAP 0805	950-0305301
C54	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C55	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C56	SMD 0.1UF 25V 20/80% CER Y5V CAP 0805 TR	950-1042951
C57	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C59	SMD 22NF 50V 10% CER.CAP 0805	950-2235601
C60	SMD 22NF 50V 10% CER.CAP 0805	950-2235601
C61	SMD 5.6PF 50V +-0.25PF CER COG CAP 0805	950-0565301
C62	SMD 3.0PF 50V +-0.25PF CER COG CAP 0805	950-0305301
C65	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C66	SMD 1.5PF 50V +-0.25PF CER COG CAP 0805	950-0155301
C67	SMD 1.5PF 50V +-0.25PF CER COG CAP 0805	950-0155301
C68	SMD 1.5PF 50V +-0.25PF CER COG CAP 0805	950-0155301
C69	SMD 1.5PF 50V +-0.25PF CER COG CAP 0805	950-0155301
C70	SMD 12PF 50V 5% CER COG CAP 0805 (TRS)	950-1205501
C71	SMD 100PF 50V 5% CER COG CAP 0805 (TRS)	950-1015501
C72	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C73	SMD 10PF 50V 5% CER CAP 0805 (TRS)	950-1005501

C75	SMD 56PF 50V 5% CER COG CAP 0805 (TRS)	950-5605501
C77	SMD 27PF 50V 5% CER COG CAP 0805 (TRS)	950-2705501
C78	SMD 220NF 50V 20/80% CER Y5V CAP 0805 TR	950-2245951
C79	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C80	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C81	1UF 16V 5MM RADIAL ELECT' CAP TR	155-1051751
C82	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C83	SMD 22NF 50V 10% CER.CAP 0805	950-2235601
C84	SMD 220NF 50V 20/80% CER Y5V CAP 0805 TR	950-2245951
C85	SMD 150PF 50V 5% CER COG CAP 0805 (TRS)	950-1515501
C86	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C87	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C88	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C90	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C91	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C92	SMD 0.1UF 25V 20/80% CER Y5V CAP 0805 TR	950-1042951
C93	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C95	SMD 22NF 50V 10% CER.CAP 0805	950-2235601
C96	SMD 22NF 50V 10% CER.CAP 0805	950-2235601
C97	SMD 3.0PF 50V +-0.25PF CER COG CAP 0805	950-0305301
C98	SMD 3.0PF 50V +-0.25PF CER COG CAP 0805	950-0305301
C101	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C102	SMD 1.5PF 50V +-0.25PF CER COG CAP 0805	950-0155301
C103	SMD 1.5PF 50V +-0.25PF CER COG CAP 0805	950-0155301
C104	SMD 1.5PF 50V +-0.25PF CER COG CAP 0805	950-0155301
C105	SMD 1.5PF 50V +-0.25PF CER COG CAP 0805	950-0155301
C106	SMD 12PF 50V 5% CER COG CAP 0805 (TRS)	950-1205501
C107	SMD 100PF 50V 5% CER COG CAP 0805 (TRS)	950-1015501
C108	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C109	SMD 10PF 50V 5% CER CAP 0805 (TRS)	950-1005501
C111	SMD 56PF 50V 5% CER COG CAP 0805 (TRS)	950-5605501
C113	SMD 27PF 50V 5% CER COG CAP 0805 (TRS)	950-2705501
C114	SMD 220NF 50V 20/80% CER Y5V CAP 0805 TR	950-2245951
C115	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C116	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C117	1UF 16V 5MM RADIAL ELECT' CAP TR	155-1051751
C118	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C119	SMD 22NF 50V 10% CER.CAP 0805	950-2235601
C120	SMD 220NF 50V 20/80% CER Y5V CAP 0805 TR	950-2245951
C121	SMD 150PF 50V 5% CER COG CAP 0805 (TRS)	950-1515501
C122	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C123	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C124	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C125	SMD 3.0PF 50V +-0.25PF CER COG CAP 0805	950-0305301
C126	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C127	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C128	SMD 0.1UF 25V 20/80% CER Y5V CAP 0805 TR	950-1042951
C129	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C131	SMD 22NF 50V 10% CER.CAP 0805	950-2235601
C132	SMD 22NF 50V 10% CER.CAP 0805	950-2235601
C133	SMD 5.6PF 50V +-0.25PF CER COG CAP 0805	950-0565301
C134	SMD 3.0PF 50V +-0.25PF CER COG CAP 0805	950-0305301
C137	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C138	SMD 1.5PF 50V +-0.25PF CER COG CAP 0805	950-0155301
C139	SMD 1.5PF 50V +-0.25PF CER COG CAP 0805	950-0155301
C140	SMD 1.5PF 50V +-0.25PF CER COG CAP 0805	950-0155301
C141	SMD 1.5PF 50V +-0.25PF CER COG CAP 0805	950-0155301
C142	SMD 12PF 50V 5% CER COG CAP 0805 (TRS)	950-1205501
C143	SMD 100PF 50V 5% CER COG CAP 0805 (TRS)	950-1015501
C144	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C145	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C147	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C148	SMD 5.6PF 50V +-0.25PF CER COG CAP 0805	950-0565301
C151	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C155	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C157	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C158	SMD 220PF 50V 5% CER COG CAP 0805 (TRS)	950-2215501
C159	SMD 220PF 50V 5% CER COG CAP 0805 (TRS)	950-2215501
C160	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C161	SMD 220PF 50V 5% CER COG CAP 0805 (TRS)	950-2215501
C162	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C165	SMD 1.8PF 50V +-0.25PF CER COG CAP 0805	950-0185301
C168	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C169	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C170	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C171	SMD 5.6PF 50V +-0.25PF CER COG CAP 0805	950-0565301
C172	100UF 16V 5MM RADIAL ELECT' CAP TR	155-1071751
C173	100UF 16V 5MM RADIAL ELECT' CAP TR	155-1071751
C174	SMD 0.1UF 25V 20/80% CER Y5V CAP 0805 TR	950-1042951
C175	1UF 50V 5MM M/LAYER CER.CAP TR	157-1055751
C176	1UF 50V 5MM M/LAYER CER.CAP TR	157-1055751
C177	1UF 50V 5MM M/LAYER CER.CAP TR	157-1055751
C178	1UF 50V 5MM M/LAYER CER.CAP TR	157-1055751
C181	SMD 4.7PF 50V +-0.25PF CER COG CAP 0805	950-0475301
C182	SMD 5.6PF 50V +-0.25PF CER COG CAP 0805	950-0565301
C184	SMD 1.8PF 50V +-0.25PF CER COG CAP 0805	950-0185301
C185	SMD 3.0PF 50V +-0.25PF CER COG CAP 0805	950-0305301
C189	10UF 16V 5MM RADIAL ELECT' CAP TR	155-1061751
C190	10UF 16V 5MM RADIAL ELECT' CAP TR	155-1061751
C191	1000UF 16V 5MM RAD ELEC' CAP (10X16)	155-1081750
C192	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C193	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C194	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C195	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C196	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C197	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C198	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C199	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C200	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C201	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C202	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C203	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C204	SMD 56PF 50V 5% CER COG CAP 0805 (TRS)	950-5605501
C205	SMD 56PF 50V 5% CER COG CAP 0805 (TRS)	950-5605501
C206	SMD 56PF 50V 5% CER COG CAP 0805 (TRS)	950-5605501
C207	SMD 56PF 50V 5% CER COG CAP 0805 (TRS)	950-5605501
C208	SMD 56PF 50V 5% CER COG CAP 0805 (TRS)	950-5605501
C209	SMD 56PF 50V 5% CER COG CAP 0805 (TRS)	950-5605501
C210	SMD 56PF 50V 5% CER COG CAP 0805 (TRS)	950-5605501
C211	SMD 56PF 50V 5% CER COG CAP 0805 (TRS)	950-5605501
C212	SMD 56PF 50V 5% CER COG CAP 0805 (TRS)	950-5605501
C213	SMD 56PF 50V 5% CER COG CAP 0805 (TRS)	950-5605501
C214	SMD 56PF 50V 5% CER COG CAP 0805 (TRS)	950-5605501
C215	SMD 56PF 50V 5% CER COG CAP 0805 (TRS)	950-5605501
C216	SMD 56PF 50V 5% CER COG CAP 0805 (TRS)	950-5605501
C217	SMD 56PF 50V 5% CER COG CAP 0805 (TRS)	950-5605501
C218	SMD 56PF 50V 5% CER COG CAP 0805 (TRS)	950-5605501
C219	SMD 56PF 50V 5% CER COG CAP 0805 (TRS)	950-5605501
C220	SMD 56PF 50V 5% CER COG CAP 0805 (TRS)	950-5605501
C221	SMD 56PF 50V 5% CER COG CAP 0805 (TRS)	950-5605501
C222	SMD 27PF 50V 5% CER COG CAP 0805 (TRS)	950-2705501
C223	SMD 27PF 50V 5% CER COG CAP 0805 (TRS)	950-2705501
C224	SMD 56PF 50V 5% CER COG CAP 0805 (TRS)	950-5605501
C225	SMD 56PF 50V 5% CER COG CAP 0805 (TRS)	950-5605501
C226	SMD 56PF 50V 5% CER COG CAP 0805 (TRS)	950-5605501
C227	SMD 56PF 50V 5% CER COG CAP 0805 (TRS)	950-5605501
C228	SMD 56PF 50V 5% CER COG CAP 0805 (TRS)	950-5605501
C229	SMD 56PF 50V 5% CER COG CAP 0805 (TRS)	950-5605501
C230	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C231	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C232	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C233	SMD 12PF 50V 5% CER COG CAP 0805 (TRS)	950-1205501
C234	SMD 12PF 50V 5% CER COG CAP 0805 (TRS)	950-1205501
C235	SMD 3.3PF 50V +-0.25PF CER COG CAP 0805	950-0335301
C236	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C237	SMD 12PF 50V 5% CER COG CAP 0805 (TRS)	950-1205501
C238	SMD 12PF 50V 5% CER COG CAP 0805 (TRS)	950-1205501
C239	SMD 3.3PF 50V +-0.25PF CER COG CAP 0805	950-0335301

C240	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C241	SMD 12PF 50V 5% CER COG CAP 0805 (TRS)	950-1205501
C242	SMD 12PF 50V 5% CER COG CAP 0805 (TRS)	950-1205501
C243	SMD 3.3PF 50V +-0.25PF CER COG CAP 0805	950-0335301
C244	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C245	SMD 12PF 50V 5% CER COG CAP 0805 (TRS)	950-1205501
C246	SMD 12PF 50V 5% CER COG CAP 0805 (TRS)	950-1205501
C247	SMD 3.3PF 50V +-0.25PF CER COG CAP 0805	950-0335301
C248	SMD 1NF 50V 5% CER COG CAP 0805 (TRS)	950-1025501
C250	SMD 27PF 50V 5% CER COG CAP 0805 (TRS)	950-2705501
C251	SMD 4.7PF 50V +-0.25PF CER COG CAP 0805	950-0475301
C252	SMD 8.2PF 50V +-0.5PF CER COG CAP 0805	950-0825401
C253	SMD 6.8PF 50V +-0.25PF CER COG CAP 0805	950-0685301
C254	SMD 12PF 50V 5% CER COG CAP 0805 (TRS)	950-1205501
C255	SMD 10PF 50V 5% CER CAP 0805 (TRS)	950-1005501

Diodes

D1	SMD DIODE-BB619 MINI PLAST (TRS))	912-0061901
D3	SMD DIODE-BB515 MINI PLAST (TRS)	912-0051501
D4	SMD DIODE-BB619 MINI PLAST (TRS))	912-0061901
D6	SMD DIODE-BB515 MINI PLAST (TRS)	912-0051501
D7	SMD DIODE-BB619 MINI PLAST (TRS))	912-0061901
D9	SMD DIODE-BB515 MINI PLAST (TRS)	912-0051501
D10	SMD DIODE-BB619 MINI PLAST (TRS))	912-0061901
D12	SMD DIODE-BB515 MINI PLAST (TRS)	912-0051501
D13	5V6 5% 400MW ZENER DIODE TR	125-0056501
D14	SMD DIODE-BB515 MINI PLAST (TRS)	912-0051501
D15	SMD DIODE-BB515 MINI PLAST (TRS)	912-0051501
D16	SMD DIODE-BB515 MINI PLAST (TRS)	912-0051501
D17	SMD DIODE-BB515 MINI PLAST (TRS)	912-0051501
D18	SMD DIODE-BB515 MINI PLAST (TRS)	912-0051501
D19	SMD DIODE-BB515 MINI PLAST (TRS)	912-0051501
D20	SMD DIODE-BB515 MINI PLAST (TRS)	912-0051501
D21	SMD DIODE-BB515 MINI PLAST (TRS)	912-0051501

Inductors

L1	AXIAL INDUCTOR-27UH 5% TR	130-0270501
L2	AXIAL INDUCTOR-47UH 5% TR	130-0470501
L3	SOUND COIL 4.7UH +-3% SUMIDA HKS-999-035	133-0047051
L7	BALUN-BC0403RID-B (PEDOKA)	133-0040300
L8	18NH-COIL (GOLD) AIR WOUND (PEDOKA)	134-0018080
L9	15NH-COIL(GREEN) AIR WOUND (PEDOKA)	134-0015090
L10	AXIAL INDUCTOR-27UH 5% TR	130-0270501
L11	AXIAL INDUCTOR-47UH 5% TR	130-0470501
L12	SOUND COIL 4.7UH +-3% SUMIDA HKS-999-035	133-0047051
L17	18NH-COIL (GOLD) AIR WOUND (PEDOKA)	134-0018080
L18	15NH-COIL(GREEN) AIR WOUND (PEDOKA)	134-0015090
L19	AXIAL INDUCTOR-27UH 5%TR	130-0270501
L20	AXIAL INDUCTOR-47UH 5%TR	130-0470501
L21	SOUND COIL 4.7UH +-3% SUMIDA HKS-999-035	133-0047051
L26	18NH-COIL (GOLD) AIR WOUND (PEDOKA)	134-0018080
L27	15NH-COIL(GREEN) AIR WOUND (PEDOKA)	134-0015090
L28	AXIAL INDUCTOR-27UH 5%TR	130-0270501
L29	AXIAL INDUCTOR-47UH 5%TR	130-0470501
L30	SOUND COIL 4.7UH +-3% SUMIDA HKS-999-035	133-0047051
L35	18NH-COIL (GOLD) AIR WOUND (PEDOKA)	134-0018080
L36	15NH-COIL(GREEN) AIR WOUND (PEDOKA)	134-0015090
L38	BALUN-BC0403RID-B (PEDOKA)	133-0040300
L39	BALUN-BC0403RID-B (PEDOKA)	133-0040300

Connectors

PL1	5W SHROUDED HEADER	B 5B-EH-A JST	161-1020510
PL2	5W SHROUDED HEADER	B 5B-EH-A JST	161-1020510
PL3	7W SHROUDED HEADER	B 7B-EH-A JST	161-1020710
PL4	4W SHROUDED HEADER	B 4B-EH-A JST	161-1020410

Transistors

Q1	SMD TRANSISTOR-BC846B SOT-23	911-1084651
Q2	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q3	SMD TRANSISTOR-BFR193 (SIEMENS) SOT-23	911-0019351
Q4	SMD TRANSISTOR-BC846B SOT-23	911-1084651
Q5	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q6	SMD TRANSISTOR-BFR193 (SIEMENS) SOT-23	911-0019351
Q7	SMD TRANSISTOR-BC846B SOT-23	911-1084651
Q8	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q9	SMD TRANSISTOR-BFR193 (SIEMENS) SOT-23	911-0019351
Q10	SMD TRANSISTOR-BC846B SOT-23	911-1084651
Q11	TRANSISTOR-BC547B NPN TO-92 PACKAGE TR	110-1054701
Q12	SMD TRANSISTOR-BFR193 (SIEMENS) SOT-23	911-0019351
Q13	SMD TRANSISTOR-BFQ193 (SIEMENS) SOT-89	911-0019341
Q15	SMD TRANSISTOR-BFQ193 (SIEMENS) SOT-89	911-0019341
Q16	TRANSISTOR-BC557 PNP TO-92 PACKAGE TR	110-0055701
Q17	TRANSISTOR-BC557 PNP TO-92 PACKAGE TR	110-0055701
Q18	TRANSISTOR-BC557 PNP TO-92 PACKAGE TR	110-0055701
Q19	TRANSISTOR-BC557 PNP TO-92 PACKAGE TR	110-0055701
Q20	TRANSISTOR-BC557 PNP TO-92 PACKAGE TR	110-0055701
Q21	TRANSISTOR-BC557 PNP TO-92 PACKAGE TR	110-0055701

Resistors

R1	SMD 750R 0.1W 5% RES 0805 TR	940-7510501
R2	SMD 8K2 0.1W 5% RES 0805 (TRS)	940-8220501
R4	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R5	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R8	SMD 56R 0.1W 5% RES 0805 (TRS)	940-5600501
R9	SMD 2K7 0.1W 5% RES 0805 (TRS)	940-2720501
R10	SMD 0.1W 5% ZEROHM LINK-0805 (TRS)	940-0000501
R12	SMD 12K 0.1W 5% RES 0805 (TRS)	940-1230501
R13	SMD 56R 0.1W 5% RES 0805 (TRS)	940-5600501
R16	SMD 4K7 0.1W 5% RES 0805 (TRS)	940-4720501
R17	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R21	SMD 22K 0.1W 5% RES 0805 (TRS)	940-2230501
R22	SMD 22K 0.1W 5% RES 0805 (TRS)	940-2230501
R31	SMD 22K 0.1W 5% RES 0805 (TRS)	940-2230501
R32	SMD 750R 0.1W 5% RES 0805 TR	940-7510501
R33	SMD 8K2 0.1W 5% RES 0805 (TRS)	940-8220501
R35	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R36	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R39	SMD 56R 0.1W 5% RES 0805 (TRS)	940-5600501
R40	SMD 2K7 0.1W 5% RES 0805 (TRS)	940-2720501
R43	SMD 12K 0.1W 5% RES 0805 (TRS)	940-1230501
R44	SMD 56R 0.1W 5% RES 0805 (TRS)	940-5600501
R47	SMD 4K7 0.1W 5% RES 0805 (TRS)	940-4720501
R48	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R50	SMD 1K2 0.1W 5% RES 0805 (TRS)	940-1220501
R51	SMD 1K8 0.1W 5% RES 0805 (TRS)	940-1820501
R52	SMD 22K 0.1W 5% RES 0805 (TRS)	940-2230501
R53	SMD 22K 0.1W 5% RES 0805 (TRS)	940-2230501
R60	SMD 8K2 0.1W 5% RES 0805 (TRS)	940-8220501
R61	SMD 1K8 0.1W 5% RES 0805 (TRS)	940-1820501
R62	SMD 22K 0.1W 5% RES 0805 (TRS)	940-2230501
R63	SMD 750R 0.1W 5% RES 0805 TR	940-7510501
R64	SMD 8K2 0.1W 5% RES 0805 (TRS)	940-8220501
R65	SMD 1K2 0.1W 5% RES 0805 (TRS)	940-1220501
R66	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R67	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R68	SMD 8K2 0.1W 5% RES 0805 (TRS)	940-8220501
R70	SMD 56R 0.1W 5% RES 0805 (TRS)	940-5600501
R71	SMD 2K7 0.1W 5% RES 0805 (TRS)	940-2720501
R73	SMD 15K 0.1W 5% RES 0805 (TRS)	940-1530501
R74	SMD 12K 0.1W 5% RES 0805 (TRS)	940-1230501
R75	SMD 56R 0.1W 5% RES 0805 (TRS)	940-5600501
R78	SMD 4K7 0.1W 5% RES 0805 (TRS)	940-4720501
R83	SMD 22K 0.1W 5% RES 0805 (TRS)	940-2230501
R84	SMD 22K 0.1W 5% RES 0805 (TRS)	940-2230501

R93	SMD 22K 0.1W 5% RES 0805 (TRS)	940-2230501
R94	SMD 750R 0.1W 5% RES 0805 TR	940-7510501
R95	SMD 8K2 0.1W 5% RES 0805 (TRS)	940-8220501
R97	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R98	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R101	SMD 56R 0.1W 5% RES 0805 (TRS)	940-5600501
R102	SMD 2K7 0.1W 5% RES 0805 (TRS)	940-2720501
R104	SMD 0.1W 5% ZEROHM LINK-0805 (TRS)	940-0000501
R105	SMD 12K 0.1W 5% RES 0805 (TRS)	940-1230501
R106	SMD 56R 0.1W 5% RES 0805 (TRS)	940-5600501
R109	SMD 4K7 0.1W 5% RES 0805 (TRS)	940-4720501
R114	SMD 22K 0.1W 5% RES 0805 (TRS)	940-2230501
R115	SMD 22K 0.1W 5% RES 0805 (TRS)	940-2230501
R124	SMD 22K 0.1W 5% RES 0805 (TRS)	940-2230501
R130	SMD 75R 0.1W 5% RES 0805 (TRS)	940-7500501
R132	SMD 47R 0.1W 5% RES 0805 (TRS)	940-4700501
R136	SMD 75R 0.1W 5% RES 0805 (TRS)	940-7500501
R140	SMD 75R 0.1W 5% RES 0805 (TRS)	940-7500501
R141	SMD 75R 0.1W 5% RES 0805 (TRS)	940-7500501
R142	220R 0.25W 5% CARBON FILM RES TR	140-2212501
R143	220R 0.25W 5% CARBON FILM RES TR	140-2212501
R144	SMD 100K 0.1W 5% RES 0805 (TRS)	940-1040501
R145	SMD 100K 0.1W 5% RES 0805 (TRS)	940-1040501
R146	SMD 100K 0.1W 5% RES 0805 (TRS)	940-1040501
R147	SMD 100K 0.1W 5% RES 0805 (TRS)	940-1040501
R148	SMD 680R 0.1W 5% RES 0805 (TRS)	940-6810501
R149	SMD 47R 0.1W 5% RES 0805 (TRS)	940-4700501
R150	SMD 680R 0.1W 5% RES 0805 (TRS)	940-6810501
R151	SMD 300R 0.1W 5% RES 0805 (TRS)	940-3010501
R152	SMD 300R 0.1W 5% RES 0805 (TRS)	940-3010501
R153	SMD 300R 0.1W 5% RES 0805 (TRS)	940-3010501
R154	SMD 300R 0.1W 5% RES 0805 (TRS)	940-3010501
R155	SMD 100R 0.1W 5% RES 0805 (TRS)	940-1010501
R158	SMD 680R 0.1W 5% RES 0805 (TRS)	940-6810501
R159	SMD 47R 0.1W 5% RES 0805 (TRS)	940-4700501
R160	SMD 680R 0.1W 5% RES 0805 (TRS)	940-6810501
R167	SMD 680R 0.1W 5% RES 0805 (TRS)	940-6810501
R168	SMD 47R 0.1W 5% RES 0805 (TRS)	940-4700501
R169	SMD 680R 0.1W 5% RES 0805 (TRS)	940-6810501
R173	SMD 680R 0.1W 5% RES 0805 (TRS)	940-6810501
R174	SMD 47R 0.1W 5% RES 0805 (TRS)	940-4700501
R175	SMD 680R 0.1W 5% RES 0805 (TRS)	940-6810501
R179	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R182	SMD 270R 0.1W 5% RES 0805 (TRS)	940-2710501
R190	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R200	SMD 47R 0.1W 5% RES 0805 (TRS)	940-4700501
R201	SMD 47R 0.1W 5% RES 0805 (TRS)	940-4700501
R202	SMD 47R 0.1W 5% RES 0805 (TRS)	940-4700501
R204	SMD 1K 0.1W 5% RES 0805 (TRS)	940-1020501
R205	SMD 1K 0.1W 5% RES 0805 (TRS)	940-1020501
R206	SMD 1K 0.1W 5% RES 0805 (TRS)	940-1020501
R207	SMD 1K 0.1W 5% RES 0805 (TRS)	940-1020501
R208	SMD 470R 0.1W 5% RES 0805 (TRS)	940-4710501
R209	SMD 27R 0.1W 5% RES 0805 (TRS)	940-2700501
R210	SMD 470R 0.1W 5% RES 0805 (TRS)	940-4710501
R211	SMD 470R 0.1W 5% RES 0805 (TRS)	940-4710501
R212	SMD 470R 0.1W 5% RES 0805 (TRS)	940-4710501
R213	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R214	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R215	SMD 470R 0.1W 5% RES 0805 (TRS)	940-4710501
R216	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R217	SMD 470R 0.1W 5% RES 0805 (TRS)	940-4710501
R218	SMD 10K 0.1W 5% RES-0805 (TRS)	940-1030501
R219	SMD 100R 0.1W 5% RES 0805 (TRS)	940-1010501
R220	SMD 100R 0.1W 5% RES 0805 (TRS)	940-1010501
R221	SMD 100R 0.1W 5% RES 0805 (TRS)	940-1010501
R222	SMD 100R 0.1W 5% RES 0805 (TRS)	940-1010501
R223	SMD 100R 0.1W 5% RES 0805 (TRS)	940-1010501
R224	SMD 100R 0.1W 5% RES 0805 (TRS)	940-1010501
R225	SMD 100R 0.1W 5% RES 0805 (TRS)	940-1010501
R226	SMD 100R 0.1W 5% RES 0805 (TRS)	940-1010501
R227	SMD 100R 0.1W 5% RES 0805 (TRS)	940-1010501
R228	SMD 100R 0.1W 5% RES 0805 (TRS)	940-1010501
R229	SMD 100R 0.1W 5% RES 0805 (TRS)	940-1010501
R230	SMD 100R 0.1W 5% RES 0805 (TRS)	940-1010501
R231	SMD 22K 0.1W 5% RES 0805 (TRS)	940-2230501
R232	SMD 22K 0.1W 5% RES 0805 (TRS)	940-2230501
R233	SMD 22K 0.1W 5% RES 0805 (TRS)	940-2230501
R234	SMD 22K 0.1W 5% RES 0805 (TRS)	940-2230501
R235	SMD 22K 0.1W 5% RES 0805 (TRS)	940-2230501
R236	SMD 22K 0.1W 5% RES 0805 (TRS)	940-2230501
R237	SMD 22K 0.1W 5% RES 0805 (TRS)	940-2230501
R238	SMD 22K 0.1W 5% RES 0805 (TRS)	940-2230501
R239	SMD 22K 0.1W 5% RES 0805 (TRS)	940-2230501
R240	SMD 22K 0.1W 5% RES 0805 (TRS)	940-2230501
R241	SMD 22K 0.1W 5% RES 0805 (TRS)	940-2230501
R242	SMD 22K 0.1W 5% RES 0805 (TRS)	940-2230501

Integrated Circuits

U1	SL5066 VIDEO MODULATOR (PLESSEY)	109-0506601
U2	SP5511S I2C BUS 4 ADDRESS FREQ SYNTH	909-0551101
U3	SL5066 VIDEO MODULATOR (PLESSEY)	109-0506601
U4	SP5511S I2C BUS 4 ADDRESS FREQ SYNTH	909-0551101
U5	SL5066 VIDEO MODULATOR (PLESSEY)	109-0506601
U6	SP5511S I2C BUS 4 ADDRESS FREQ SYNTH	909-0551101
U7	SL5066 VIDEO MODULATOR (PLESSEY)	109-0506601
U8	SP5511S I2C BUS 4 ADDRESS FREQ SYNTH	909-0551101

Miscellaneous Components

CAN1	MOD SCRN CAN FRAME FOR PSM8000 SMATV	315-8000000
CAN2	MOD SCRN CAN FRAME FOR PSM8000 SMATV	315-8000000
CAN3	MOD SCRN CAN FRAME FOR PSM8000 SMATV	315-8000000
CAN4	MOD SCRN CAN FRAME FOR PSM8000 SMATV	315-8000000
F/A SAMPLE	47K 0.25W 5% CARBON FILM RES TR	140-4732501
J1	PHONO SOCKET-SINGLE PCB MTG FOR SMATV	165-8000101
REV A3		PCB-SMATV
MODULATOR BOARD (EMC) - REV A3		182-0202103

GRID REFERENCES - MOTHERBOARD CIRCUIT DIAGRAM 1

CAPACITORS	
C1	D2
C2	D2
C3	D2
C4	D2
C5	D2
C6	D2
C7	D2
C8	D2
C9	D1
C10	D2
C11	D2
C12	D2
C13	D2
C14	D2
C15	D3
C16	D2
C17	D2
C18	D2
C19**	D3
C20**	D3
C21**	D3
C22	D2
C23	D2
C24	D2
C25	D3
C26**	D3
C27**	D3
C28	C2
C29	C2
C30	C2
C31	C2
C32	C2
C33	C2
C34	C2
C35	C2
C36	C1
C37	C1
C38	C1
C39	C1
C40	C2
C41	C2
C42	C2
C43	C2
C44	C2
C45	C2
C46	C2
C47	C2
C48	C3
C49	C3
C50	C2
C51	C2
C52	C3
C53	C3
C54	C3
C55	C3
C56	C3
C57	B2
C58	B2
C59	B2
C60	C2
C61**	B2
C62**	B2
C63	A2
C64‡	A2
C65‡	A2
C66	A2
C67	A1
C68	B1
C69**	D3
C70	C1
C101	D6
C102	D6
C103	D6
C104	D6
C105	D6
C106	D6
C107	D6
C108	D6
C109	D5
C110	D5
C111	D5
C112	D5
C113	D5
C114**	D5
C115	D5
C116**	D5
C117	D5
C118	D4
C119	D4
C120	D4
C121	D4
C122	D4
C123	D4
C124	D4
C125	D4
C126	D6
C127	D6
C128	D5
C129	D4
C130°	C6
C131	C6
C132**	C6
C133	C6
C134	C6
C135	C6
C136	C6
C137	C6
C138**	C6
C139	C6
C140	C6
C141	C5
C142	C5
C143**	D5
C144**	C5
C145**	C5
C146	C5
C147	C5
C148	C5
C149	C5
C150	C5
C151	C5
C152**	C5
C153	C5
C154	C5
C155	C5
C156	C5
C157	D4
C158**	C4
C159	C4
C160	C4
C161	C5
C162	C5
C163	C4
C164	C4
C165	C4
C166	C4
C167	C4
C168	C4
C169**	C4
C170	C4
C171	C4
C172	C4
C173	C4
C174	C4
C175	C3
C176**	C3
C177	C6
C178	C6
C179**	C6
C180	D6
C181	D5
C182**	D5
C184	D6
C201	B6
C202	B6
C203	B6
C204	B6
C205	B6
C206	B6
C209	B5
C210	B5
C211	B5
C212	B5
C213	B5
C214**	B5
C215	B5
C216**	B5
C217	B4
C218	B4
C219	B4
C220	B4
C221	B4
C222	B4
C223	B4
C224	B4
C225	B4
C226	B6
C227	B6
C228	B6
C230°	B6
C231	B6
C232**	A6
C233	A6
C234	A6
C235	A6
C236	A6
C237	A6
C238**	A6
C239	A6
C240	A6
C241	A5
C242	A5
C243**	B5
C244**	A5
C245**	A5
C246	A5
C247	A5
C248	A5
C250	A5
C251	A5
C252**	B5
C253	A5
C255	B5
C256	B5
C257**	B6
C258**	B4
C259	A4
C261	A5
C262	A5
C263	A4
C265	A4
C266	B4
C267	A4
C268	A4
C269**	A4
C270	A4
C271	A4
C273	A4
C274	A4
C275	B3
C276**	A3
C277	A6
C278	A6
C279	A6
C280	B6
C281	B5
C282**	B5
C284	B4

DIODES	
D1	D2
D2	D2
D3	D2
D4	D2
D5	D2
D6	D2
D7	D2
D8	D2
D9	D2
D10	D1
D11	D2
D12	D2
D13	D2
D14	D2
D15	D3
D16	D3
D17	D3
D18	D3
D19	C2
D20	C2
D21	C1
D22**	B2
D23**	B2
D24**	A2
D25	C2
D100	D6
D101	D6
D102	D6
D103	C5
D104	C3
D105	C3
D106	C6
D107	C6
D108	C6
D200	B6
D201	B6
D202	B6
D203	A5
D204	A4
D205	A5
D206	A6
D207	A6
D208	A6

INDUCTANCES	
L1	D2
L2	D2
L3	D3
L4	C2
L5	B3
L6	D3
L100	D5
L101	D5
L102^^	C6
L103**	C6
L104^^	C6
L105	D5
L106	C5
L107	C5
L108	C5
L200	B5
L201	B5
L202^^	A6
L203**	A6
L204^^	A6
L205	B5
L206	A5
L207	A5
L208	A5
L300	D5
L301	D5
L302^^	C6
L303**	C6
L304^^	C6
L305	C5
L306	C5
L307	C5
L308	C5
L400	B5
L401	B5
L402^^	A6
L403**	C6
L404^^	A6
L405	B5
L406	A5
L407	A5
L408	A5

WIRE LINKS	
LK17^	D3
LK23^	D3

CONNECTORS	
PL1	A1
PL2	D3
PL3	B1
PL5	D3
PL6**	A3
PL9**	C3
PL11**	B3
PL12**	D3
PL100	C5
PL200	A5
SK1	D1
SK2	C2
SK100	D6
SK200	B6

TRANSISTORS	
Q1	D2
Q2	C1
Q3	C2
Q4	B2
Q5	C1
Q6	A2
Q7	A2
Q8	B1
Q100	D6
Q101	D5
Q102	D5
Q103	D5
Q104	D5
Q105	D4
Q106	D4
Q107	D4
Q108	D4
Q109	D4
Q110	D4
Q111	D4
Q112	D6
Q113	D6
Q114	D5
Q115	D5
Q116	D6
Q118	C3
Q119	D6
Q200	B6
Q201	B5
Q202	B5
Q203	B5
Q204	B5
Q205	B4
Q206	B4
Q207	B4
Q208	B4
Q209	B4
Q210	B4
Q211	B3
Q212	B6
Q213	B6
Q214	B5
Q215	B5
Q216	B6
Q218	A3
Q219	B6

RESISTORS	
R1	D1
R2	D2
R3	D2
R4	D2
R5	D2
R6	D2
R7	D2
R8	D2
R9	D2
R10	D2
R11	D2
R12	D2
R13	D2
R14	D2
R15	D2
R16	D2
R17	D2
R18	D2
R19	D2
R20	D1
R21	D3
R22#	D3
R23	C2
R24	C2
R25	C2
R26	C2
R27	C2
R28	C2
R29	C1
R30	C1
R31	C1
R32	C1
R33	C1
R34	C1
R35	D2
R36	D2
R37	D1
R38	C1
R39	D2
R40	D2
R41	D2
R42	D2
R43	C2
R44	C2
R45**	C2
R46	D2
R47	D2
R48	C2
R49	C2
R50	C2
R51	C2
R52	C3
R53	C3
R54	C3
R55	C3
R56	B3
R57	B2
R58	B2
R59	B2
R60	B2
R61	C2
R62	B2
R63	C1
R64	C1
R65	C1
R66**	B2
R67	B3
R68	B3
R69	B2
R70	B2
R71	B2
R72	B2
R73	B2
R74	B2
R75	B2
R76	B2
R77	B2
R78**	B2
R79	A2
R80	A2
R81	A2
R82	A2
R83	A1
R84	A1
R85	A1
R86	A1
R87	A1
R88	B1
R89	B1
R90	B1
R91	B1
R92	B1
R93	B1
R94	C1
R95	C1
R100	D6
R101	D6
R102	D6
R103	D6
R104	D6
R105	D6
R106	D6
R107	D6
R108	D6
R109	D5
R110	D5
R111	D5
R112	D5
R113	D5
R114	D5
R115	D5
R116	D5
R117	D5
R118	D5
R119	D5
R120	D5
R121	D5
R122	D4
R123	D4
R124	D4
R125	D4
R126	D4
R127	D4
R128	D4
R129	D4
R130	D4
R131	D4
R132	D4
R133	D4
R134	D4
R135	D4
R136	D4
R137	D4
R138**	D3
R139	D6
R140**	D6
R141	D6
R142	D6
R143	D5
R144	D6
R145	D5
R146	D5
R147	D5

R148	D5	R207	B6	R268	A5	U4	C2
R149	D5	R208	B6	R269	A5	U5	C2
R150	D6	R209	B5	R270	B5	U6	B2
R151	D6	R210	B5	R271**	A3	U7**	B2
R152	D6	R211	B5	R272	B5	U8**	A2
R153	C6	R212	B5	R273	A5	U9	A2
R154	C6	R213	B5	R274	A5	U100	D6
R155	C6	R214	B5	R275	A5	U101A	D5
R156**	D6	R215	B5	R276	A5	U101B	D5
R157**	D6	R216	B5	R277	A4	U101C	D4
R158	C6	R217	B5	R278	A4	U102	D5
R159	D6	R218	B5	R280	A4	U103	D6
R160	C6	R219	B5	R281	A4	U104	C4
R161	C6	R220	B5	R282	A4	U105A	A5
R162	C6	R221	B5	R283**	A4	U105B	C4
R163	C5	R222	B4	R284	A4	U105C	A4
R164	D5	R223	B4	R285	A4	U105D	C5
R165	C5	R224	B4	R286	A4	U106A	C5
R166	C5	R225	B4	R287	B4	U106B	A5
R167	C5	R226	B4	R288	B4	U200	B6
R168	C5	R227	B4	R289	B4	U201A	B5
R169	C5	R228	B4	R290	B4	U201B	B5
R170	D5	R229	B4	R291	A4	U201C	B4
R171**	C5	R230	B4	R292	A4	U202	B5
R172	C5	R231	B4	R293	A3	U203	B6
R173	C5	R232	B4	R294	A3	U204A	A4
R174	C5	R233	B4	R295	A3	U204B	A4
R175	C5	R234	B4	R296**	A3	U204C	B4
R176	C5	R235	B4	R297	A4		
R177	C4	R236	B4	R298	B5	**MISCELLANEOUS**	
R178	C4	R237	B3	R299	B5	**COMPONENTS**	
R179	C4	R238**	B3	R501	C6	BAT1**	B2
R180	C4	R239	B6	R502	C6	FS1	D1
R181	C4	R241	B6	R503	C6	IR1	B1
R182	C4	R242	B6	R504	C6	LED1	A1
R183**	C4	R243	B5	R505	C6	LED2	B1
R184	C4	R244	B6	R506	C6	MOD100	D6
R185	C4	R245	B5	R507	C6	MOD200	B6
R186	C4	R246	B5	R508	C6	SW1	B1
R187	C4	R247	B5	R509	A6	T1	D2
R188	C4	R248	B5	R510	A6	T2	D2
R189	C4	R249	B5	R511	A6	VR100	D6
R190	C4	R250	B6	R512	A6	VR200	B6
R191	C4	R251	B6	R513	A6	X1	C2
R192	C3	R252	B6	R514	A6	X2	B3
R193	C3	R253	A6	R515	A6	X3**	B2
R194	C3	R254	A6	R516	A6	X4‡	A2
R195	C3	R255	A6	R533	A4	X100	D6
R196**	C3	R256**	B6	R534	B4	X101	D6
R197	C4	R257**	B6	R537	C3	X102	D6
R198	D5	R259	B6	R538	D3	X103	C6
R199	D5	R260	A6			X104	C6
R200	B6	R261	A6	**INTEGRATED**		X105	C6
R201	B6	R262	A6	**CIRCUITS**		X201	B6
R202	B6	R263	A5	U1	D2	X202	B6
R203	B6	R264	B5	U2	C2	X203	B6
R204	B6	R265	B5	U3A	C1	X204	B6
R205	B6	R266	A5	U3B	C1	X205	A6
R206	B6	R267	A5	U3C	C2		

** not fitted

actually a wire link (in a resistor position)

° actually a resistor (in a capacitor position)

^ actually an inductance (in a link position)

^^ actually a wire link (in an inductance position)

† mounted on copper side of PCB

‡ may be mounted on U8 extension PCB (NB: C64 as C5 and C65 as C6, X4 as X1)

GRID REFERENCES - MOTHERBOARD CIRCUIT DIAGRAM 2

CAPACITORS		C359	C4	C438 **	A6
C301	D6	C360	C4	C439	A5
C302	D6	C361	C5	C440	A6
C303	D6	C362	C5	C441	A5
C304	D6	C363	C4	C442	A5
C305	D6	C364	C4	C443 **	B5
C306	D6	C365	C4	C444 **	A5
C307	D6	C366	C4	C445 **	A5
C308	D5	C367	C4	C446	A5
C309	D5	C368	C4	C447	A5
C310	D5	C369 **	C4	C448	A5
C311	D5	C370	C4	C449	A5
C312	D5	C371	C4	C451	A5
C313	D5	C372	D4	C452**	A5
C314**	D5	C373	C4	C453	A5
C315	D5	C374	C4	C455	B5
C316**	D5	C375	C3	C456	B5
C317	D4	C376**	C3	C458**	B4
C318	D4	C377	C6	C459	A4
C319	D4	C378	C6	C461	A5
C320	D4	C379	C6	C462	A5
C321	D4	C380	D6	C463	A4
C322	D4	C381	D5	C465	A4
C323	D4	C382**	D5	C466	B4
C324	D4	C384	D6	C467	A4
C325	D4	C401	B6	C468	A4
C326	D6	C402	B6	C469 **	A4
C327	D6	C403	B6	C470	A4
C328	D5	C404	B6	C471	A4
C329	D4	C405	B6	C473	A4
C330°	C6	C406	B6	C474	A4
C331	C6	C409	B5	C475	B3
C332**	C6	C410	B5	C476**	A3
C333	C6	C411	B5	C477	A6
C334	C6	C412	B5	C478	A6
C335	C6	C413	B5	C479	A6
C336	C6	C414**	B5	C480	B6
C337	C6	C415	B5	C481	B5
C338 **	C6	C416**	B5	C482**	B5
C339	C6	C417	B4	C483	B5
C340	C6	C418	B4	C484	B6
C341	C5	C419	B4		
C342	C5	C420	B4	**DIODES**	
C343 **	C5	C421	B4	D300**	D6
C344 **	C5	C422	B4	D301	D6
C345 **	C5	C423	B4	D302	D6
C346	C5	C424	B4	D303	C5
C347	C5	C425	B4	D304	C3
C348	C5	C426	B6	D305	C3
C349	C5	C427	B6	D306	C6
C350	C5	C428	B5	D307	C6
C351	C5	C430°	A6	D308	C6
C352 **	C5	C431	A6	D400**	B6
C353	C5	C432 **	A6	D401	B6
C354	D5	C433	A6	D402	B6
C355	C5	C434	A6	D403	A5
C356	C5	C435	A6	D404	A4
C357	D4	C436	A6	D405	A3
C358 **	C4	C437	A6	D406	A6

D407	A6
D408	A6

INDUCTANCES	
L300	D5
L301	D5
L302	C6
L302	C6
L303**	C6
L305	C5
L306	C5
L307	C5
L308	C5
L400	B5
L401	B5
L402	A6
L403**	A6
L404	A6
L405	B5
L406	A5
L407	A5
L408	A5

CONNECTORS	
PL4	D3
PL7**	C3
PL8**	A3
PL10**	A3
PL13**	D3
PL300	C5
PL400	A5
SK300	D6
SK400	B6

TRANSISTORS	
Q300	D6
Q301	D5
Q302	D5
Q303	D5
Q304	D5
Q305	D4
Q306	D4
Q307	D4
Q308	D4
Q309	D4
Q310	D4
Q311	D3
Q312	D6
Q313	D6
Q314	D5
Q315	D5
Q316	D6
Q318	B3
Q319	D6
Q400	B6
Q401	B5
Q402	B5
Q403	B5
Q404	B5
Q405	B4
Q406	B4
Q407	B4
Q408	B4
Q409	B4
Q410	B4
Q411	B3
Q412	B6
Q413	B6
Q414	B5
Q415	B5
Q416	B6
Q418	A3
Q419	B6

RESISTORS		R343	D5	R402	B6	R461	A5
R300	D6	R344	D5	R403	B6	R462	A6
R301	D6	R345	D5	R404	B6	R463	A5
R302	D6	R346	D5	R405	B6	R464	B5
R303	D6	R347	D5	R406	B6	R465	B5
R304	D6	R348	D5	R407	B6	R466	A5
R305	D6	R349	D5	R408	B6	R467	A5
R306	D6	R350	D6	R409	B5	R468	A5
R307	D6	R351	D6	R410	B5	R469	A5
R308	D6	R352	D6	R411	B5	R470	B5
R309	D5	R353	B6	R412	B5	R471**	A5
R310	D5	R354	C6	R413	B5	R472	B5
R311	D5	R355	B6	R414	B5	R473	A5
R312	D5	R356**	D6	R415	B5	R474	A3
R313	D5	R357**	C6	R416	B5	R475	A3
R314	D5	R358**	C6	R417	B5	R476	A5
R315	D5	R359	C5	R418	B5	R477	A4
R316	D5	R360	C5	R419	B5	R478	A4
R317	D5	R361	C5	R420	B5	R480	B4
R318	D5	R362	C6	R421	B5	R481	A4
R319	D5	R363	C5	R422	B4	R482	A4
R320	D5	R364	D5	R423	B4	R483**	A4
R321	D5	R365	C5	R424	B4	R484	A4
R322	D4	R366	C5	R425	B4	R485	A4
R323	D4	R367	C5	R426	B4	R486	A4
R324	D4	R368	C5	R427	B4	R487	B4
R325	D4	R369	C5	R428	B4	R488	B4
R326	D4	R370	D5	R429	B4	R489	B4
R327	D4	R371**	C5	R430	B4	R490	B4
R328	D4	R372	C5	R431	B4	R491	A4
R329	D4	R373	C5	R432	B4	R492	A3
R330	D4	R374	C5	R433	B4	R493	B2
R331	D4	R375	C5	R434	B4	R494	A3
R332	D4	R376	C5	R435	B4	R495	A3
R333	D4	R377	C4	R436	B4	R496**	A3
R334	D4	R378	C4	R437	B3	R497	A4
R335	D4	R379	C4	R438**	B3	R498	B5
R336	D4	R380	C4	R439	B6	R499	B5
R337	D3	R381	C4	R440**	B6	R517	C6
R338**	D3	R382	C4	R441	B6	R518	C6
R339	D6	R383**	C4	R442	B6	R519	C6
R355	B6	R384	C4	R443	B5	R520	C6
R340**	D6	R385	C4	R444	B5	R521	C6
R342	D6	R386	C4	R445	B5	R522	C6
		R387	C4	R446	B5	R523	C6
		R388	D4	R447	B5	R524	C6
		R389	C4	R448	B5	R525	A6
		R390	C3	R449	B5	R526	A6
		R391	C3	R450	B6	R527	A6
		R392	C3	R451	B6	R528	A6
		R393	C3	R452	B6	R529	A6
		R394	C3	R453	A6	R530	A6
		R395	C3	R454	A6	R531	A6
		R396**	C3	R455	B6	R532	A6
		R397	C4	R456**	B6	R535	D4
		R398	D5	R457**	B6	R536	B4
		R399	D5	R458	A6		
		R400	B6	R459	B5		
		R401	B6	R460	A5		

INTEGRATED CIRCUITS	
U300	D6
U301A	D5
U301B	D5
U301C	D4
U302	D5
U303	C6
U304	C4
U305A	A5
U305B	C4
U305C	A4
U305D	C5
U306A	C5
U306B	A5
U400	B6
U401A	B5
U401B	B5
U401C	B4
U402	B5
U403	B6
U404	A4

MISCELLANEOUS COMPONENTS	
47NF50V	A3
47NF50V	C3
MOD300	D6
MOD400	B6
VR300	D6
VR400	B6
X300	D6
X301	D6
X302	D6
X303	C6
X304	C6
X305	C6
X401	B6
X402	B6
X403	B6
X404	B6
X405	A6

** not fitted

actually a wire link (in a resistor position)

° actually a resistor (in a capacitor position)

^ actually an inductance (in a link position)

^^ actually a wire link (in an inductance position)

† mounted on copper side of PCB

‡ may be mounted on U8 extension PCB (NB: C64 as C5 and C65 as C6, X4 as X1)

GRID REFERENCES - MOTHERBOARD PCB

CAPACITORS	
C1	A4
C2	A3
C3	B3
C4†	A2
C5	A3
C6	A3
C7	B3
C8	B3
C9	B3
C10†	B4
C11	B1
C12†	A4
C13†	A4
C14	A1
C15	C1
C16†	B4
C17†	B4
C18	B1
C19**	B1
C20†**	B4
C21**	B1
C22†	B4
C23†	B4
C24	B1
C25	B1
C26†**	B4
C27†**	B4
C28†	G4
C29	G1
C30	G1
C31†	G4
C32†	G4
C33†	G4
C34†	G4
C35†	G4
C36†	G4
C37	G1
C38	G1
C39†	G4
C40	F1
C41	F1
C42	F1
C43	G1
C44†	H4
C45†	H4
C46	H1
C47†	H4
C48†	H4
C49†	H4
C50†	H4
C51†	H4
C52	H1
C53†	H4
C54†	H4
C55†	H4
C56	H1
C57†	H4
C58†	H4
C59	C1
C60†	C4
C61**	C1
C62†**	C4
C63†	E4
C64†‡**	E4
C65†‡**	E4
C66	E1
C67	E1
C68†	B1
C69†**	B4
C70†	F4
C101†	B1
C102†	B1
C103	C4
C104	B3
C105†	B2
C106†	B2
C107†	C2
C108†	B2
C109	B3
C110	C3
C111	C3
C112†	C2
C113†	C2
C114†**	C2
C115†	C2
C116†**	C2
C117†	C2
C118†	C1
C119	C4
C120†	C1
C121†	C2
C122†	C1
C123†	C1
C124†	C1
C125	C4
C126	C3
C127†	B1
C128	C3
C129	C3
C130°†	B2
C131†	C3
C132†**	B2
C133†	C3
C134	C3
C135†	C3
C136†	C3
C137†	C3
C138†**	C3
C139	C2
C140†	C3
C141†	C3
C142†	B3
C143†**	C3
C144†**	C3
C145†**	C3
C146†	C3
C147†	B3
C148†	B3
C149†	B3
C150†	C2
C151	C2
C152†**	D3
C153	C3
C154†	D3
C155†	D2
C156†	D2
C157	D3
C158†**	D2
C159†	C2
C160	D3
C161	D3
C162†	D2
C163†	D2
C164	D3
C165	C3
C166†	D3
C167†	C2
C168†	C2
C169†**	C2
C170†	D3
C171	D2
C172	C2
C173	C2
C174	C2
C175†	C3
C176**	F1
C177	C3
C178	C4
C179†**	E4
C180†	B1
C181†	C2
C182†**	C2
C184†	C1
C201†	D1
C202†	D1
C203	D4
C204	D3
C205†	D2
C206†	D2
C209	D3
C210	D4
C211	D3
C212†	E2
C213†	E2
C214†**	E2
C215†	E2
C216†**	E2
C217†	E2
C218†	E1
C219	E4
C220†	E2
C221†	E2
C222†	E1
C223†	E2
C224†	E1
C225	E4
C226	D4
C227†	D1
C228	D4
C230°†	D2
C231†	E3
C232†**	D3
C233†	D3
C234	D3
C235†	E2
C236†	E3
C237†	D3
C238†**	D3
C239	E2
C240†	E3
C241†	D3
C242†	D3
C243†**	E3
C244†**	E3
C245†**	D3
C246†	D3
C247†	D3
C248†	D3
C250†	D3
C251	E2
C252†**	D3
C253	D3
C255†	C2
C256†	C2
C257†**	D3
C258†**	D2
C259†	D2
C261	D3
C262†	D2
C263†	D2
C265	D2
C266†	D3
C267†	D2
C268†	E2
C269†**	D2
C270†	C3
C271	C2
C273	D2
C274	D2
C275†	D3
C276**	F1
C277	E4
C278	E4
C279†	E4
C280†	D1
C281†	D2
C282†**	D2
C284†	D1
C301†	E1
C302†	E1
C303	E4
C304	E3
C305†	E2
C306†	E2
C307†	E2
C308†	E2
C309	E3
C310	E3
C311	E3
C312†	F2
C313†	F2
C314†**	F2
C315†	F2
C316†**	F2
C317†	F2
C318†	F1
C319	F4
C320†	F1
C321†	F2
C322†	F1
C323†	F1
C324†	F1
C325	F4
C326	F3
C327†	E1
C328	F4
C329	F3
C330°†	E2
C331†	F3
C332†**	E2
C333†	E3
C334	E3
C335†	F3
C336†	F3
C337†	E3
C338†**	C3
C339	F2
C340†	F3
C341†	E3
C342†	E3
C343†**	F3
C344†**	F3
C345†**	F3
C346†	E3
C347†	E3
C348†	E3
C349†	E3
C350†	F3
C351	F2
C352†**	F3
C353	F3
C354†	G3
C355†	G2
C356†	G2
C357	G2
C358†**	F2
C359†	F2
C360	G3
C361	G3
C362†	G2
C363†	G2
C364	G3
C365	F3
C366†	F3
C367†	F2
C368†	F2
C369†**	F2
C370†	F3
C371	F2
C372	F2
C373	F2
C374	F2
C375†	F3
C376**	F1
C377	F3
C378	F4
C379†	D4
C380†	E1
C381†	F2
C382†**	F2
C384†	F1
C401†	F1
C402†	F1
C403	F4
C404	G3
C405†	G2
C406†	G2
C409	F3
C410	G4
C411	G3
C412†	H2
C413†	H2
C414†**	H2
C415†	H2
C416†**	H2
C417†	H2
C418†	H1
C419	H4
C420†	H2
C421†	H2
C422†	G1
C423†	G1
C424†	G1
C425	H4
C426	G4
C427†	G1
C428†	G4
C430°†	G2
C431†	H3
C432†**	G3
C433†	G3
C434	G3
C435†	G2
C436†	G3
C437†	G3
C438†	G3
C439	H2
C440†	G3
C441†	G3
C442†	G3
C443†**	H3
C444†**	G3
C445†**	G3
C446†	G3
C447†	G3
C448†	G3
C449†	G3
C451	H2
C452†**	G3
C453	G2
C455†	F2
C456†	F2
C458†**	G2
C459†	G2
C461	F3
C462†	F2
C463†	F2
C465	G2
C466†	G3
C467†	G2
C468†	G2
C469†**	G2
C470†	F3
C471	F2
C473	G2
C474	G2
C475†	F3
C476**	F1
C477	H4
C478	H4
C479†	D4
C480†	G1
C481†	G2
C482†**	G2
C483	G3
C484†	G1

DIODES	
D1	A2
D2	A2
D3	A2
D4	A2
D5	B2
D6	B2
D7	B3
D8	B3
D9	B3
D10	A3
D11	A1
D12	A1
D13	F1
D14	F1
D15	F1
D16	F1
D17	F1
D18	F1
D19	F1
D20	G1
D21	F1
D22**	C1
D23**	C1
D24**	E1
D25	F1
D100	B4
D101	C4
D102	B4
D103†	B3
D104	B3
D105	B3
D106	C4
D107	C4
D108	E1
D200	D4
D201	D4
D202	D4
D203†	D3
D204	D2
D205	D2
D206	D4
D207	D4
D208	E1
D300**	E4
D301	F4
D302	E4
D303†	E3
D304	F2
D305	F2
D306	F4
D307	F4
D308	D1
D400**	F4
D401	G4
D402	G4
D403†	G3
D404	G2
D405	G2
D406	G4
D407	G4
D408	D1

INDUCTANCES	
L1	A4
L2	B1
L3	B1
L4	G1
L5	H1
L6	B2
L100	C3
L101	C3
L102^^	B3
L103**	B3
L104^^	B2
L105	C3
L106	C3
L107	C3
L108	B2
L200	E3
L201	E3
L202^^	D3
L203**	D2
L204^^	D2
L205	E2
L206	E2
L207	D2
L208	D2
L300	F3
L301	F3
L302^^	E3
L303**	E3
L304^^	E2
L305	F2
L306	F2
L307	F2
L308	E2
L400	H3
L401	H3
L402^^	G3
L403**	G2
L404^^	G2
L405	H2
L406	G2
L407	G2
L408	G2

WIRE LINKS	
LK1	B1
LK2	B1
LK3	B2
LK4	C1
LK5	C1
LK6	C1
LK7	C1
LK8	C1
LK9	C1
LK10	C2
LK11	B2
LK12	B2
LK13	B2
LK14	B2
LK15	B2
LK16	B2
LK17^	B2
LK18	B2
LK19	B4
LK20	B4
LK21	B4
LK22	B4
LK23^	B4
LK24	C3
LK26	C3
LK27	B3
LK28	B3
LK29	B3
LK30	B4
LK31	B4
LK32	B4
LK33	B4
LK34	B4
LK35	C4
LK36	C4

LK37	C4	LK96	D2	LK155	G2	LK214	E3	LK273	G3	Q109	C4	Q411	G3	R50†	H4	R113†	C2
LK38	D4	LK97	D2	LK156	G2	LK215	E3	LK274	G3	Q110	C3	Q412	G4	R51†	H4	R114†	C2
LK39	D3	LK98	D2	LK157	G2	LK216	E3	LK275	G3	Q111	C3	Q413	G4	R52†	H4	R115†	C2
LK40	C3	LK99	D2	LK158	G2	LK217	E3	LK276	G3	Q112	C4	Q414	H3	R53†	H4	R116†	C2
LK41	C3	LK100	E1	LK159	G2	LK218	E3	LK277	H3	Q113	C4	Q415	H2	R54†	H4	R117†	C2
LK42	C3	LK101	E2	LK160	G2	LK219	E3	LK278	G4	Q114	B3	Q416	G4	R55†	H4	R118†	C2
LK43	C3	LK102	E1	LK161	G2	LK220	E2	LK279	G4	Q115	C2	Q418	F2	R56†	H4	R119†	C2
LK44	C3	LK103	E1	LK162	G2	LK221	E2	LK280	G4	Q116	C4	Q419	G2	R57†	H4	R120†	C2
LK45	C3	LK104	E1	LK163	G2	LK222	E2	LK281	G4	Q118	C2			R58†	H4	R121†	C2
LK46	C3	LK105	E1	LK164	G2	LK223	E2	LK282	C3	Q119	C2	**RESISTORS**		R59†	H4	R122†	C2
LK47	C3	LK106	E1	LK165	G2	LK224	E2	LK283	D3	Q200	D3	R1	A4	R60†	H4	R123†	C2
LK48	D3	LK107	E1	LK166	G1	LK225	E2	LK284	F3	Q201	D4	R2	A3	R61†	H4	R124†	C1
LK49	C3	LK108	E2	LK167	G2	LK226	E3	LK285	G3	Q202	D3	R3	B2	R62†	H4	R125†	C2
LK50	C2	LK109	E2	LK168	G2	LK227	E3	LK286	E3	Q203	D3	R4	A2	R63†	F4	R126†	C1
LK51	C2	LK110	E2	LK169	G1	LK228	E3	LK287	B3	Q204	D3	R5†	B2	R64†	F4	R127†	C1
LK52	C2	LK111	E2	LK170	G2	LK229	E3			Q205	D3	R6	A3	R65†	F4	R128†	C2
LK53	C2	LK112	E2	LK171	G1	LK230	E3	**CONNECTORS**		Q206	D4	R7†	B2	R66†**	C4	R129†	C1
LK54	C2	LK113	E1	LK172	G1	LK231	E3	PL1	B4	Q207	D4	R8†	B2	R67†	C4	R130†	C1
LK55	D2	LK114	E2	LK173	G1	LK232	E3	PL2	C1	Q208	D3	R9	B3	R68†	C4	R131†	C1
LK56	D2	LK115	E2	LK174	G2	LK233	E3	PL3	D1	Q209	D4	R10†	B2	R69†	C4	R132†	C2
LK57	D2	LK116	E2	LK175	G2	LK234	E3	PL4	F2	Q210	D3	R11†	B2	R70†	C4	R133†	C2
LK58	D2	LK117	E2	LK176	H2	LK235	E3	PL5	C2	Q211	D3	R12†	A2	R71†	C4	R134†	C2
LK59	D2	LK118	E2	LK177	H2	LK236	F3	PL6**	F1	Q212	D4	R13	A3	R72†	C4	R135†	C2
LK60	D2	LK119	E2	LK178	H2	LK237	F3	PL7**	F1	Q213	D4	R14	B3	R73†	C4	R136†	C2
LK61	D2	LK120	E2	LK179	H2	LK238	F3	PL8**	F1	Q214	E3	R15	B3	R74†	F4	R137†	C2
LK62	D2	LK121	E2	LK180	H2	LK239	F3	PL9**	F1	Q215	E2	R16†	B2	R75†	E4	R138†**	F4
LK63	D2	LK122	E2	LK181	H2	LK240	F3	PL10**	F1	Q216	D4	R17	B2	R76†	D4	R139†	B1
LK64	D2	LK123	E2	LK182	H2	LK241	F3	PL11**	F1	Q218	D2	R18	B3	R77†	E4	R140†**	C1
LK65	D2	LK124	E2	LK183	H2	LK242	F2	PL12**	F1	Q219	D2	R19	B3	R78†**	C4	R141†	C1
LK66	D2	LK125	E2	LK184	H2	LK243	F2	PL13**	F1	Q300	E3	R20	B2	R79†	E4	R142†	C1
LK67	D2	K126	E2	LK185	H3	LK244	F2	PL100	C3	Q301	E4	R21†	A4	R80†	E4	R143†	C1
LK68	D2	LK127	E1	LK186	H3	LK245	F2	PL200	E2	Q302	F3	R22#	B1	R81†	E4	R144†	C1
LK69	C2	LK128	E2	LK187	H3	LK246	F2	PL300	F2	Q303	F3	R23†	G4	R82†	E4	R145†	B1
LK70	C2	LK129	E2	LK188	H3	LK247	F3	PL400	H2	Q304	F3	R24†	G4	R83†	E3	R146†	B2
LK71	C2	LK130	E2	LK189	D2	LK248	F3	SK1	A4	Q305	F3	R25†	G4	R84†	D3	R147†	B2
LK72	C2	LK131	E1	LK190	D2	LK249	F3	SK2	H4	Q306	F4	R26†	G4	R85†	D4	R148†	C3
LK73	C2	LK132	E2	LK191	D2	LK250	F3	SK100	C4	Q307	F4	R27†	G4	R86†	D4	R149†	C3
LK74	D2	LK133	F2	LK192	D3	LK251	F3	SK200	E4	Q308	F3	R28†	G4	R87†	B1	R150†	B1
LK75	D2	LK134	F2	LK193	D3	LK252	F3	SK300	F4	Q309	F4	R29†	G4	R88†	C4	R151†	B1
LK76	D1	LK135	F1	LK194	D3	LK253	F3	SK400	H4	Q310	F3	R30†	G4	R89†	E4	R152†	C3
LK77	D1	LK136	F1	LK195	D3	LK254	F3			Q311	F3	R31†	G4	R90†	E4	R153†	C3
LK78	D1	LK137	F1	LK196	D3	LK255	F3	**TRANSISTORS**		Q312	E4	R32†	G4	R91†	E4	R154†	C3
LK79	D1	LK138	F1	LK197	D3	LK256	F4	Q1	B4	Q313	F4	R33†	G4	R92†	C1	R155†	C3
LK80	D1	LK139	F2	LK198	D3	LK257	F4	Q2	G1	Q314	E3	R34†	G4	R93†	C1	R156†**	C2
LK81	D1	LK140	F2	LK199	D3	LK258	F4	Q3	F1	Q315	F2	R35†	F4	R94†	G4	R157†**	C3
LK82	D1	LK141	F2	LK200	D3	LK259	F4	Q4	H1	Q316	E4	R36†	F4	R95†	G4	R158†	B3
LK83	D1	LK142	F2	LK201	D3	LK260	F3	Q5	F1	Q318	F2	R37†	F4	R100†	B1	R159†	C3
LK84	D1	LK143	F2	LK202	D3	LK261	G2	Q6	E1	Q319	F2	R38†	F4	R101†	B2	R160†	C3
LK85	D1	LK144	F2	LK203	E3	LK262	G2	Q7	E1	Q400	G3	R39†	F4	R102†	B2	R161†	C3
LK86	D1	LK145	F2	LK204	E3	LK263	G3	Q8	E1	Q401	G4	R40†	F4	R103†	B2	R162†	C3
LK87	D1	LK146	F2	LK205	E3	LK264	G3	Q100	B3	Q402	G3	R41†	F4	R104†	B2	R163†	C3
LK88	D1	LK147	F2	LK206	E3	LK265	G3	Q101	B4	Q403	G3	R42†	F4	R105†	B2	R164†	C3
LK89	D1	LK148	G1	LK207	E3	LK266	G3	Q102	C3	Q404	G3	R43†	F4	R106†	C1	R165†	C3
LK90	D1	LK149	G1	LK208	D4	LK267	G3	Q103	C3	Q405	H3	R44†	F4	R107†	C1	R166†	C3
LK91	D1	LK150	G1	LK209	D4	LK268	G3	Q104	C3	Q406	H4	R45†**	F4	R108†	B1	R167†	B3
LK92	D2	LK151	G1	LK210	D4	LK269	G3	Q105	C3	Q407	G4	R46†	G4	R109†	C2	R168†	C3
LK93	D2	LK152	G1	LK211	E4	LK270	G3	Q106	C4	Q408	G3	R47†	G4	R110†	B1	R169†	D3
LK94	D2	LK153	G1	LK212	E4	LK271	G3	Q107	C4	Q409	G4	R48†	H4	R111†	C2	R170†	C3
LK95	D2	LK154	G1	LK213	E4	LK272	G3	Q108	C3	Q410	G3	R49†	H4	R112†	C2	R171†**	C3

R172†	D2	R231†	E1	R291†	D3	R350†	E1	R409†	G2	R468†	G3	R529†	H1		
R173†	C3	R232†	D2	R292†	D3	R351†	E1	R410†	G1	R469†	G3	R530†	H1		
R174†	C2	R233†	D2	R293†	D3	R352†	E3	R411†	G2	R470†	G3	R531†	D4		
R175†	D2	R234†	D2	R294†	D3	R353†	E3	R412†	G2	R471†**	G3	R532†	D4		
R176†	D2	R235†	D2	R295†	D3	R354†	F3	R413†	G2	R472†	G2	R533†	C2		
R177†	D2	R236†	D2	R296†	F4	R355†	F3	R414†	G2	R473†	G3	R534†	D2		
R178†	D2	R237†	D2	R297†	D2	R356†**	F2	R415†	G1	R474†	G3	R535†	F2		
R179†	D2	R238†**	F4	R298†	D2	R357†**	F3	R416†	G2	R475†	F2	R536†	G2		
R180†	D2	R239†	D1	R299†	D2	R358†**	E3	R417†	G2	R476†	F2	R537†	H4		
R181†	C2	R240†**	D1	R300†	E2	R359†	F3	R418†	G2	R477†	F2	R538†	B1		
R182†	C2	R241†	D1	R301†	E2	R360†	F3	R419†	G2	R478†	F2				
R183†**	C2	R242†	D1	R302†	E2	R361†	F3	R420†	H2	R480†	G2	**INTEGRATED CIRCUITS**			
R184†	D3	R243†	D1	R303†	E2	R362†	F3	R421†	H2	R481†	G2				
R185†	D3	R244†	D1	R304†	E2	R363†	E3	R422†	H2	R482†	G2	U1	B3		
R186†	D3	R245†	E2	R305†	E2	R364†	F3	R423†	H2	R483†**	G2	U2	G1		
R187†	D3	R246†	E2	R306†	F1	R365†	F3	R424†	H2	R484†	F3	U3	F1		
R188†	D3	R247†	E2	R307†	F1	R366†	F3	R425†	H2	R485†	G3	U4	F1		
R189†	C3	R248†	E3	R308†	E1	R367†	E3	R426†	H1	R486†	G3	U5	H1		
R190†	C3	R249†	E3	R309†	E2	R368†	F3	R427†	H1	R487†	F3	U6	D1		
R191†	C3	R250†	D1	R310†	E1	R369†	F3	R428†	G2	R488†	G3	U7**	C1		
R192†	C3	R251†	D1	R311†	F2	R370†	F3	R429†	G1	R489†	G3	U8**	E1		
R193†	D3	R252†	D3	R312†	F2	R371†**	F3	R430†	G1	R490†	G3	U9	D1		
R194†	C3	R253†	D3	R313†	F2	R372†	F2	R431†	G1	R491†	G1	U100	B3		
R195†	D3	R254†	D3	R314†	F2	R373†	F3	R432†	G2	R492†	G3	U101	C3		
R196†**	F4	R255†	D3	R315†	F2	R374†	F2	R433†	G2	R493†	F3	U102	C3		
R197†	C2	R256†**	E2	R316†	F2	R375†	G2	R434†	G2	R494†	G3	U103†	C3		
R198†	C2	R257†**	E3	R317†	F2	R376†	G2	R435†	G2	R495†	F3	U104	C3		
R199†	C2	R258†**	D3	R318†	F2	R377†	G2	R436†	G2	R496†**	F4	U105	D2		
R200†	D2	R259†	E3	R319†	F2	R378†	G2	R437†	G2	R497†	G2	U106	D3		
R201†	D2	R260†	E3	R320†	F2	R379†	G2	R438†**	F4	R498†	G2	U200	D3		
R202†	D2	R261†	D3	R321†	F2	R380†	G2	R439†	G1	R499†	G2	U201	D3		
R203†	D2	R262†	D3	R322†	F2	R381†	F2	R440†**	G1	R501†	C1	U202	D3		
R204†	D2	R263†	D3	R323†	F2	R382†	F2	R441†	G1	R502†	C1	U203†	E3		
R205†	D2	R264†	E3	R324†	F1	R383†**	F2	R442†	G1	R503†	C1	U204	D3		
R206†	D1	R265†	E3	R325†	F1	R384†	F3	R443†	G1	R504†	C1	U300	E3		
R207†	D1	R266†	E3	R326†	F1	R385†	F3	R444†	G1	R505†	C1	U301	F3		
R208†	D1	R267†	D3	R327†	F1	R386†	F3	R445†	H2	R506†	C1	U302	F3		
R209†	D2	R268†	D3	R328†	F2	R387†	F3	R446†	H2	R507†	D4	U303†	F3		
R210†	D1	R269†	D3	R329†	F1	R388†	F3	R447†	H2	R508†	E4	U304	F3		
R211†	E2	R270†	D3	R330†	F1	R389†	F3	R448†	H3	R509†	E1	U305	G2		
R212†	D2	R271†**	D3	R331†	F1	R390†	F3	R449†	H3	R510†	E1	U306	F3		
R213†	D2	R272†	D2	R332†	F2	R391†	F3	R450†	G1	R511†	E1	U400	G3		
R214†	E2	R273†	D3	R333†	F2	R392†	F3	R451†	G1	R512†	E1	U401	G3		
R215†	D1	R274†	D3	R334†	F2	R393†	F3	R452†	G3	R513†	E1	U402	H3		
R216†	E2	R275†	D3	R335†	F2	R394†	F3	R453†	G3	R514†	E1	U403†	G3		
R217†	D2	R276†	D2	R336†	F1	R395†	F3	R454†	G3	R515†	D4	U404	G3		
R218†	E2	R277†	D2	R337†	F2	R396†**	F4	R455†	G3	R516†	E4				
R219†	E2	R278†	D2	R338†**	F4	R397†	F2	R456†**	G2	R517†	F1				
R220†	E2	R280†	D2	R339†	E1	R398†	F2	R457†**	G3	R518†	F1				
R221†	E2	R281†	D2	R340†**	E1	R399†	F2	R458†	G3	R519†	F1				
R222†	E2	R282†	D2	R341†	E1	R400†	G2	R459†	H3	R520†	F1				
R223†	E2	R283†**	D2	R342†	F1	R401†	G2	R460†	G3	R521†	F1				
R224†	E2	R284†	C3	R343†	F1	R402†	G2	R461†	G3	R522†	F1				
R225†	E2	R285†	D3	R344†	F1	R403†	G2	R462†	G3	R523†	D1				
R226†	E1	R286†	D3	R345†	E2	R404†	G2	R463†	G3	R524†	E4				
R227†	E1	R287†	D3	R346†	E2	R405†	G2	R464†	H3	R525†	H1				
R228†	D1	R288†	D3	R347†	E2	R406†	G1	R465†	H3	R526†	H1				
R229†	E1	R289†	D3	R348†	F3	R407†	G1	R466†	H3	R527†	H1				
R230†	E1	R290†	D3	R349†	F3	R408†	G1	R467†	G3	R528†	H1				

** not fitted

actually a wire link (in a resistor position)

° actually a resistor (in a capacitor position)

^ actually an inductance (in a link position)

^^ actually a wire link (in an inductance position)

† mounted on copper side of PCB

‡ may be mounted on U8 extension PCB (NB: C64 as C5 and C65 as C6, X4 as X1)

GRID REFERENCES - MODULATOR CIRCUIT DIAGRAM

CAPACITORS	
C1	D6
C2**	D6
C3	D6
C4**	D6
C5	D5
C6	D5
C7	D5
C8	D5
C9	D5
C10	D5
C11	D5
C12	D5
C13	D5
C14	D5
C15	D5
C16	D6
C17	D6
C18	C6
C19	C6
C20	D6
C21	D6
C23	C6
C24	C6
C26	C6
C27	D5
C28	D6
C29	D5
C30	D5
C31	D5
C32	D5
C33	D5
C34	D5
C35	C5
C36	C5
C37	B6
C38**	B6
C39	B6
C40**	B6
C41	B6
C42	B5
C43	B5
C44	B5
C45	B5
C46	B5
C47	B5
C48	B5
C49	B5
C50	B5
C51	B6
C52	B6
C53	A6
C54	B6
C55	A6
C56	A6
C57	B6
C59	A6
C60	A6
C61	A6
C62	B6
C65	B5
C66	B5
C67	B5
C68	A5
C69	A5
C70	A5
C71	A5
C72	A5
C73	D3
C74**	D3
C75	D3
C76**	D3
C77	D3
C78	D2
C79	D2
C80	D2
C81	D2
C82	D2
C83	D2
C84	D2
C85	D2
C86	D2
C87	D2
C88	D3
C90	D3
C91	C3
C92	C3
C93	D3
C95	C3
C96	C3
C97	D3
C98	D3
C101	D2
C102	D2
C103	D2
C104	D2
C105	D2
C106	D2
C107	C2
C108	C1
C109	B3
C110**	B3
C111	B3
C112**	B3
C113	B3
C114	B2
C115	B2
C116	B2
C117	B2
C118	B2
C119	B2
C120	B2
C121	B2
C122	B2
C123	B2
C124	B3
C125	A3
C126	B3
C127	A3
C128	A3
C129	B3
C131	A3
C132	A3
C133	A3
C134	B3
C137	B2
C138	B2
C139	B2
C140	B2
C141	B2
C142	B3
C143	A2
C144	A2
C145	C5
C147	C6
C148	D3
C151	C5
C155	C6
C156**	C6
C157	B6
C158	B5
C159	B2
C160	B3
C161	D2
C162	D3
C165	C5
C168	C5
C169	C5
C170	C5
C171	C4
C172	B2
C173	B2
C174	B2
C175	D6
C176	B6
C177	D3
C178	B3
C181	C6
C182	C6
C184	C5
C185	D6
C189	D6
C190	D6
C191	D6
C192	D6
C193	D6
C194	D6
C195	D6
C196	D6
C197	D6
C198	D6
C199	D6
C200	C6
C201	A6
C202	C3
C203	A3
C204	C6
C205	C6
C206	C6
C207	C6
C208	C6
C209	C6
C210	A3
C211	A3
C212	A3
C213	A3
C214	A3
C215	A3
C216	C3
C217	C3
C218	C3
C219	C3
C220	C3
C221	C3
C222	A6
C223	A6
C224	A6
C225**	A6
C226	A6
C227	A6
C228	A6
C229	A6
C230	C4
C231	B4
C232	B4
C233	C2
C234	C3
C235	D3
C236	C2
C237	C5
C238	C5
C239	D5
C240	C5
C241	A5
C242	A5
C243	A5
C244	A5
C245	A5
C246	A3
C247	A3
C248	A3
C249**	D6
C250	C4
C251	C4
C252	C4
C253	C4
C254	C4
C255	C4
C256	C5

DIODES	
D1	D5
D3	D5
D4	B5
D6	A5
D7	D2
D9	D2
D10	C5
D12	B2
D13	B2
D14	C2
D15	D3
D16	D5
D17	D5
D18	A5
D19	A5
D20	A2
D21†	A3

INDUCTORS	
L1	D6
L2	D6
L3	D5
L7	C6
L8	D5
L9	C5
L10	B6
L11	B6
L12	B5
L17	B5
L18	A5
L19	D3
L20	D3
L21	D2
L26	D2
L27	C2
L28	B3
L29	B3
L30	B2
L35	B2
L36	A2
L38	C6
L39	B6

CONNECTORS	
PL1	C6
PL2	C4
PL3	C4
PL4	A6

TRANSISTORS	
Q1	C6
Q2	C5
Q3	C6
Q4	A6
Q5	A5
Q6	A6
Q7	C3
Q8	C2
Q9	C3
Q10	A3
Q11	A2
Q12	B3
Q13	C5
Q15	C5
Q16	C5
Q17	D5
Q18	B5
Q19	D2
Q20	B2
Q21	C5

RESISTORS	
R1	D6
R2	D5
R4	D5
R5	D5
R8	D6
R9	D6
R10	C6
R11**	C6
R12	C6
R13	D6
R16	C5
R17	C5
R21	C5
R22	C5
R31	C6
R32	B6
R33	B5
R35	B5
R36	B5
R39	B6
R40	B6
R41**	A6
R42**	A6
R43	A6
R44	B6
R47	A5
R48	A5
R50	C6
R51	C6
R52	A6
R53	A5
R60	C5
R61	C5
R62	A6
R63	D3
R64	D2
R65	C5
R66	D2
R67	D2
R68	C5
R70	D3
R71	D3
R72**	C3
R73	C3
R74	C3
R75	D3
R78	C2
R83	C2
R84	C2
R93	C3
R94	B3
R95	B2
R97	B2
R98	B2
R101	B2
R102	B2
R103**	A3
R104	A3
R105	A3
R106	B3
R109	A2
R114	A2
R115	A2
R124	A3
R130	D5
R132	C5
R136	B5
R140	B2
R141	D2
R142	B2
R143	B2
R144	B4
R145	D2
R146	B2
R147	D4
R148	C6
R149	D6
R150	C6
R151	C6
R152	A6
R153	C3
R154	A3
R155	C6
R158	A6
R159	B6
R160	A6
R167	A3
R168	B3
R169	A3
R173	D3
R174	D3
R175	D3
R179	C3
R182	A6
R190	A3
R200	C5
R201	C5
R202	C5
R204	D3
R205	B3
R206	D5
R207	B5
R208	C4
R209	C4
R210	C4
R211	D5
R212	B5
R213	B5
R214	D5
R215	D2
R216	D2
R217	B2
R218	B6
R219	C6
R220	C6
R221	C6
R222	A3
R223	A3
R224	A3
R225	C3
R226	C3
R227	C3
R228	A6
R229	A6
R230	A6
R231	C2
R232	C2
R233	D2
R234	C5
R235	C5
R236	D5
R237	A5
R238	A5
R239	A5
R240	A2
R241	A2
R242	A2

INTEGRATED CIRCUITS	
U1	D5
U2	C6
U3	B5
U4	A6
U5	D2
U6	C3
U7	B2
U8	A3

MISCELLANEOUS COMPONENTS	
CAN1	D5
CAN2	B6
CAN3	D2
CAN4	B2
J1	C4

** not fitted

° actually a resistor (in a capacitor position)

∞ actually a capacitor (in a resistor position)

† mounted on copper side of PCB

GRID REFERENCES - MODULATOR PCB

CAPACITORS	
C1†	D1
C2†**	D1
C3†	D1
C4†**	D1
C5†	C1
C6†	C1
C7†	C1
C8†	C1
C9	B1
C10†	D2
C11†	C2
C12†	C1
C13†	C1
C14†	C2
C15†	C2
C16†	C2
C17†	C2
C18†	C2
C19†	C2
C20†	C2
C21†	C1
C23†	C2
C24†	C2
C26†	C1
C27†	C1
C28†	C2
C29†	C1
C30†	D1
C31†	D2
C32†	D2
C33†	D2
C34†	D2
C35†	D1
C36†	D2
C37†	D2
C38†**	D2
C39†	D2
C40†**	D2
C41†	C2
C42†	C2
C43†	C2
C44†	C2
C45	B2
C46†	D2
C47†	C3
C48†	C2
C49†	C2
C50†	C3
C51†	C3
C52†	C2
C53†	C2
C54†	C2
C55†	C3
C56†	C3
C57†	C3
C59†	C3
C60†	C3
C61†	C2
C62†	C2
C65†	C2
C66†	D2
C67†	D2
C68†	D3
C69†	D3
C70†	D3
C71†	D3
C72†	D3
C73†	A2
C74†**	A2
C75†	A2
C76†**	A2
C77†	B2
C78†	B2
C79†	B2
C80†	B2
C81	C2
C82†	A2
C83†	B2
C84†	B2
C85†	B2
C86†	B2
C87†	B2
C88†	B2
C90†	B2
C91†	B1
C92†	B1
C93†	B1
C95†	B2
C96†	B2
C97†	B2
C98†	B2
C101†	B2
C102†	A2
C103†	A2
C104†	A2
C105†	A2
C106†	A2
C107†	A2
C108†	A1
C109†	A3
C110†**	A3
C111†	A3
C112†**	A3
C113†	B3
C114†	B3
C115†	B3
C116†	B3
C117	C3
C118†	A3
C119†	B3
C120†	B3
C121†	B3
C122†	B3
C123†	B3
C124†	B3
C125†	B2
C126†	B3
C127†	B2
C128†	B2
C129†	B2
C131†	B2
C132†	B2
C133†	B2
C134†	B3
C137†	B3
C138†	A3
C139†	A3
C140†	A3
C141†	A2
C142†	A3
C143†	A3
C144†	A2
C145†	B2
C147†	B2
C148†	B2
C151†	B2
C155†	B2
C156†**	B2
C157†	C3
C158†	C2
C159†	B3
C160†	B2
C161†	†B2
C162†	B2
C165†	B2
C168†	B1
C169†	B1
C170†	†B1
C171†	B1
C172	A1
C173	B1
C174†	C1
C175	A2
C176	A3
C177	D1
C178	D2
C181†	B2
C182†	B2
C184†	B2
C185†	C2
C189	A2
C190	A1
C191	A1
C192†	D2
C193†	D2
C194†	D3
C195†	D3
C196†	A1
C197†	A1
C198†	A2
C199†	A2
C200†	D2
C201†	C3
C202†	A1
C203†	A2
C204†	C2
C205†	C2
C206†	D2
C207†	D2
C208†	D2
C209†	D2
C210†	B2
C211†	A2
C212†	B2
C213†	A2
C214†	A2
C215†	A2
C216†	A1
C217†	A1
C218†	B1
C219†	B1
C220†	B1
C221†	B1
C222†	C1
C223†	C1
C224†	C3
C225†**	D3
C226†	D3
C227†	D3
C228†	C3
C229†	C3
C230†	B1
C231†	C1
C232†	C1
C233†	B2
C234†	B2
C235†	B2
C236†	B2
C237†	C1
C238†	C1
C239†	C2
C240†	C2
C241†	C2
C242†	C2
C243†	C3
C244†	C3
C245†	B3
C246†	B3
C247†	B3
C248†	B2
C249†**	A2
C250†	B1
C251†	B1
C252†	B1
C253†	B1
C254†	B1
C255†	B1
C256†	B2

DIODES	
D1†	C2
D3†	D2
D4†	C3
D6†	D3
D7†	B2
D9†	A2
D10†	B2
D12†	A3
D13	B1
D14†	B2
D15†	B2
D16†	C2
D17†	C2
D18†	C3
D19†	C2
D20†	B3
D21†	B3

INDUCTORS	
L1	A1
L2	A1
L3	B3
L7	B2
L8	A2
L9	A2
L10	A2
L11	A2
L12	B3
L17	A2
L18	A2
L19	D2
L20	D2
L21	C1
L26	D2
L27	D2
L28	D3
L29	D3
L30	C2
L35	D2
L36	D2
L38	C2
L39	C2

CONNECTORS	
PL1	A2
PL2	D2
PL3	A1
PL4	B1

TRANSISTORS	
Q1†	C2
Q2	A2
Q3†	C1
Q4†	C3
Q5	A3
Q6†	C2
Q7†	B2
Q8	D1
Q9†	B2
Q10†	B2
Q11	D2
Q12†	B3
Q13†	B2
Q15†	B1
Q16	C1
Q17	A1
Q18	A3
Q19	D1
Q20	D2
Q21	C2

RESISTORS	
R1†	D2
R2†	C1
R4†	C2
R5†	C2
R8†	C2
R9†	C1
R10†	C2
R11†	C2
R12†	C2
R13†	C1
R16†	C2
R17†	C2
R21†	D1
R22†	D2
R31†	D2
R32†	D2
R33†	C2
R35†	C3
R36†	C3
R39†	C2
R40†	C2
R41†**	C3
R42†**	C3
R43†	C3
R44†	C2
R47†	C3
R48†	C3
R50†	B2
R51†	B2
R52†	D2
R53†	D3
R60†	B2
R61†	B1
R62†	D3
R63†	A2
R64†	B2
R65†	B1
R66†	B2
R67†	B1
R68†	B1
R70†	B2
R71†	B2
R72†**	B1
R73†	B1
R74†	B1
R75†	B2
R78†	A1
R83†	A2
R84†	A1
R93†	A1
R94†	A3
R95†	B3
R97†	B2
R98†	B2
R101†	B3
R102†	B3
R103†	B2
R104†	B2
R105†	B2
R106†	B3
R109†	A2
R114†	A3
R115†	A2
R124†	A2
R130†	C1
R132†	B2
R136†	C2
R140†	B3
R141†	B2
R142	A1
R143	B1
R144†	D3
R145†	A2
R146†	A2
R147†	D2
R148†	C2
R149†	C2
R150†	C2
R151†	C1
R152†	C2
R153†	B2
R154†	B3
R155†	B2
R158†	C2
R159†	C2
R160†	C2
R167†	B2
R168†	B2
R169†	B2
R173†	B2
R174†	B2
R175†	B2
R179†	A1
R182†	C1
R190†	A2
R200†	B2
R201†	B1
R202†	B1
R204†	B2
R205†	B3
R206†	C1
R207†	C2
R208†	B1
R209†	B1
R210†	B1
R211†	D2
R212†	D3
R213†	D3
R214†	D2
R215†	A1
R216†	A1
R217†	A2
R218†	A2
R219†	C2
R220†	D2
R221†	D2
R222†	B2
R223†	B2
R224†	A2
R225†	A1
R226†	B1
R227†	B1
R228†	D3
R229†	D3
R230†	C3
R231†	B2
R232†	B2
R233†	B2
R234†	C1
R235†	C1
R236†	C2
R237†	C2
R238†	C2
R239†	C3
R240†	B3
R241†	B3
R242†	B3

INTEGRATED CIRCUITS	
U1	B1
U2†	C2
U3	B2
U4†	C3
U5	C2
U6†	B1
U7	C3
U8†	B2

MISCELLANEOUS COMPONENTS	
CAN1	A1
CAN2	A3
CAN3	D1
CAN4	D3
J1	B1

** not fitted

▫ actually a resistor (in a capacitor position)

∞ actually a capacitor (in a resistor position)

† mounted on copper side of PCB

MODEL - SPECIFIC INFORMATION
PARTS UNIQUE TO PACE SMATV UNITS

PART Nº 646-8200900 PSM8000/02/ME PAL-G

1OFF	MODULATOR BOARD (NON-EMC) - REV A2	182-0202102
1 OFF	BASE-PSM8000 SMATV UNBRANDED	322-8000121
1 OFF	USER MANUAL-PSM8000 SMATV PACE (ISS 2)	502-8000101
1 OFF	QUICK GUIDE SHEET	504-8001000
R186	15K REPLACED BY SMD 3K3 0.1W 5% M.BOARD	940-3320501
R286	15K REPLACED BY SMD 3K3 0.1W 5% M.BOARD	940-3320501
R386	15K REPLACED BY SMD 3K3 0.1W 5% M.BOARD	940-3320501
R486	15K REPLACED BY SMD 3K3 0.1W 5% M.BOARD	940-3320501
MOD1	BSFC77G51 2GHz S/LNB "F" SW 18/27 TUNER	221-2077041
MOD2	BSFC77G51 2GHz S/LNB "F" SW 18/27 TUNER	221-2077041
MOD3	BSFC77G51 2GHz S/LNB "F" SW 18/27 TUNER	221-2077041
MOD4	BSFC77G51 2GHz S/LNB "F" SW 18/27 TUNER	221-2077041
U4	OTP BOARD (Z8 EXTENSION) EPROM -27256	805-8000001

PART Nº 646-8200100 PSM8000/02 PAL-G 'NON-EMC'

1OFF	MODULATOR BOARD (NON-EMC) - REV A2	182-0202102
1 OFF	BASE-PSM8000 SMATV UNBRANDED	322-8000121
1 OFF	QUICK GUIDE SHEET	504-8001000
1 OFF	USER MANUAL-PSM8000 SMATV PACE (ISS 2)	502-8000101
MOD1	BSFC77G51 2GHz S/LNB "F" SW 18/27 TUNER	221-2077041
MOD2	BSFC77G51 2GHz S/LNB "F" SW 18/27 TUNER	221-2077041
MOD3	BSFC77G51 2GHz S/LNB "F" SW 18/27 TUNER	221-2077041
MOD4	BSFC77G51 2GHz S/LNB "F" SW 18/27 TUNER	221-2077041
U4	OTP BOARD (Z8) EPROM -27256	805-8000001

PART Nº 646-8010100 PSM8000/10 PAL-I 'NON-EMC'

1OFF	MODULATOR BOARD (EMC) - REV A3	182-0202103
1 OFF	BASE-PSM8000 SMATV UNBRANDED	322-8000121
1 OFF	QUICK GUIDE SHEET	504-8001000
1 OFF	USER MANUAL-PSM8000 SMATV PACE (ISS 2)	502-8000101
MOD1	BSFC77G39 2GHz S/LNB "F" SW 18/27 TUNER	221-2077391
MOD2	BSFC77G39 2GHz S/LNB "F" SW 18/27 TUNER	221-2077391
MOD3	BSFC77G39 2GHz S/LNB "F" SW 18/27 TUNER	221-2077391
MOD4	BSFC77G39 2GHz S/LNB "F" SW 18/27 TUNER	221-2077391
U4	OTP BOARD (Z8) EPROM -27256	805-8000001

PART Nº 646-8200400 PSM8000/22 PAL-K 'NON-EMC'

1OFF	MODULATOR BOARD (NON-EMC) - REV A2	182-0202102
1 OFF	BASE-PSM8000 SMATV UNBRANDED	322-8000121
1 OFF	USER MANUAL-PSM8000 SMATV PACE (ISS 2)	502-8000101
1 OFF	QUICK GUIDE SHEET	504-8001000
C13	180PF REPL. BY SMD 120PF 50V 5% M/BOARD	950-1215501
C49	180PF REPL. BY SMD 120PF 50V 5% M/BOARD	950-1215501
C85	180PF REPL. BY SMD 120PF 50V 5% M/BOARD	950-1215501
C121	180PF REPL. BY SMD 120PF 50V 5% M/BOARD	950-1215501
MOD1	BSFC77G51 2GHz S/LNB "F" SW 18/27 TUNER	221-2077041
MOD2	BSFC77G51 2GHz S/LNB "F" SW 18/27 TUNER	221-2077041
MOD3	BSFC77G51 2GHz S/LNB "F" SW 18/27 TUNER	221-2077041
MOD4	BSFC77G51 2GHz S/LNB "F" SW 18/27 TUNER	221-2077041
U4	OTP BOARD (Z8 EXTENSION) EPROM -27256	805-8000001

PART Nº 646-8200101 PSM8000/02 PAL-G 'EMC'

1OFF	MODULATOR BOARD (EMC) - REV A3	182-0202103
1 OFF	BASE-PSM8000 SMATV UNBRANDED	322-8000121
1 OFF	QUICK GUIDE SHEET	504-8001000
1 OFF	USER MANUAL-PSM8000 SMATV PACE (ISS 2)	502-8000101
MOD1	BSFC77G51 2GHz S/LNB "F" SW 18/27 TUNER	221-2077041
MOD2	BSFC77G51 2GHz S/LNB "F" SW 18/27 TUNER	221-2077041
MOD3	BSFC77G51 2GHz S/LNB "F" SW 18/27 TUNER	221-2077041
MOD4	BSFC77G51 2GHz S/LNB "F" SW 18/27 TUNER	221-2077041
U4	OTP BOARD (Z8) EPROM -27256	805-8000001

LATE CHANGES

- As from 1.12.93 (ECO S000332) base and cover are up issued to use leathergrain paint finish.
- As from 22.11.93 (ECO S000329) SCART sockets SK100, SK200, SK300 and SK400 — MFK6341 (NO LUGS) type are replaced by JR21A7 PINR/ANGLE types.

Other Changes

- As from 31.8.93 (ECO S000284) to prevent intermittent failure of modulators to power up and excessive current when powered up. Four 47k 0.25W resistors are retrofitted between the metal screening can and the RF input of SP5511S on the pcb underside. To reduce excess current R211, R212, R215 and R217 zerohm link replaced by 470R.
- As from the 9.8.93 (ECO S272) the EMC modulator board is modified to improve output power and flatness optimisation. Component values changed are R9, R40, R71, R102 from 3k3 to 2k7, R149, R159, R174, R169 from 75R to 47R, R148, R150, R158, R160, R173, R175, R167, R169 from 470R to 680R and capacitor C254 from 6.8pf to 12pf.
- As from the 23.7.93 (ECO S263) the EMC compatible modulator board is added, modulator pcb identification suffix of E onwards have EMC compatibility.
- As from 7.9.93 (ECO S000291) to increase audio level to equal terrestrial transmission standard, the amplifier gain was increased, R193, R293, R393 and R493 values were changed to 6k8 from 5k1.
- As from 31.8.93 (ECO S000286) to improve Panda frequency response and limiting at peak deviation. The following component values were changed. Receiver 1 (Rx -1) R186, R191, R193 and C166, Rx - 2 R286, R291, R293 and C266, Rx - 3 R386, R391, R393 and C366, Rx - 4 R486, R491, R493 and C466 were increased in value from 3k3 to 15k, 4k7 to 1k2, 1k8 to 5k1 and 10nF to 15nF respectively.
- As from 17.8.93 (ECO S000275) to prevent audio clicking on all inputs the phase detector output was modified. C246 was increased in value from 100nF to 470nF and a retrofitted capacitor of the same value was added in parallel.
- As from the 2.7.93 (ECO S246) the mod wires have been increased to a new length as per work instruction PD9-180-C.
- As from 1.7.93 (ECO S000244) the base is updated to improve production and efficiency.
- As from 23.6.93 (ECO S000248) to reduce earth leakage R20 and C9 'Y' class component values were changed from 4M7 to 10M and from 4n7 to 1nF.
- As from 23.6.93 (ECO S000247) to improve the audio deviation on modulated RF carriers the gain of the amplifier stage was increased, the values of R193, R293, R393 and R493 were changed to 1k8Ω from 1kΩ and R46 was changed to 4k3Ω from 1k8Ω.
- As from 14.6.93 (PCO S000088) four spacer washers are added behind panel.
- As from 7.6.93 (ECO S000235) audio de-emphasis set for 75µs and a modification for pre-emphasis mis-match,components C166, C266, C366 and C466 value changed from15nF to 10nF and four retrofitted 47nF 50V 10% Cer X7R Cap 0805 capacitors added in parallel with R194, R294, R394 and R494. To enable modulators to tune to 5.5MHz for PAL I and PAL G the values of C13, C49, C85 and C121 are changed from 150pf to 180pf.
- As from 20.5.93 (ECO S000219) a diode type BYW98-50 is mounted in parallel with D14 reducing component heat dissipation.
- As from 14.5.93 (ECO S000204) the SMATV is upgraded to A3 from A2 revision. Component J1 phono socket with new cable assembly and five 1nF capacitors added C230, C231, C232 and C234.

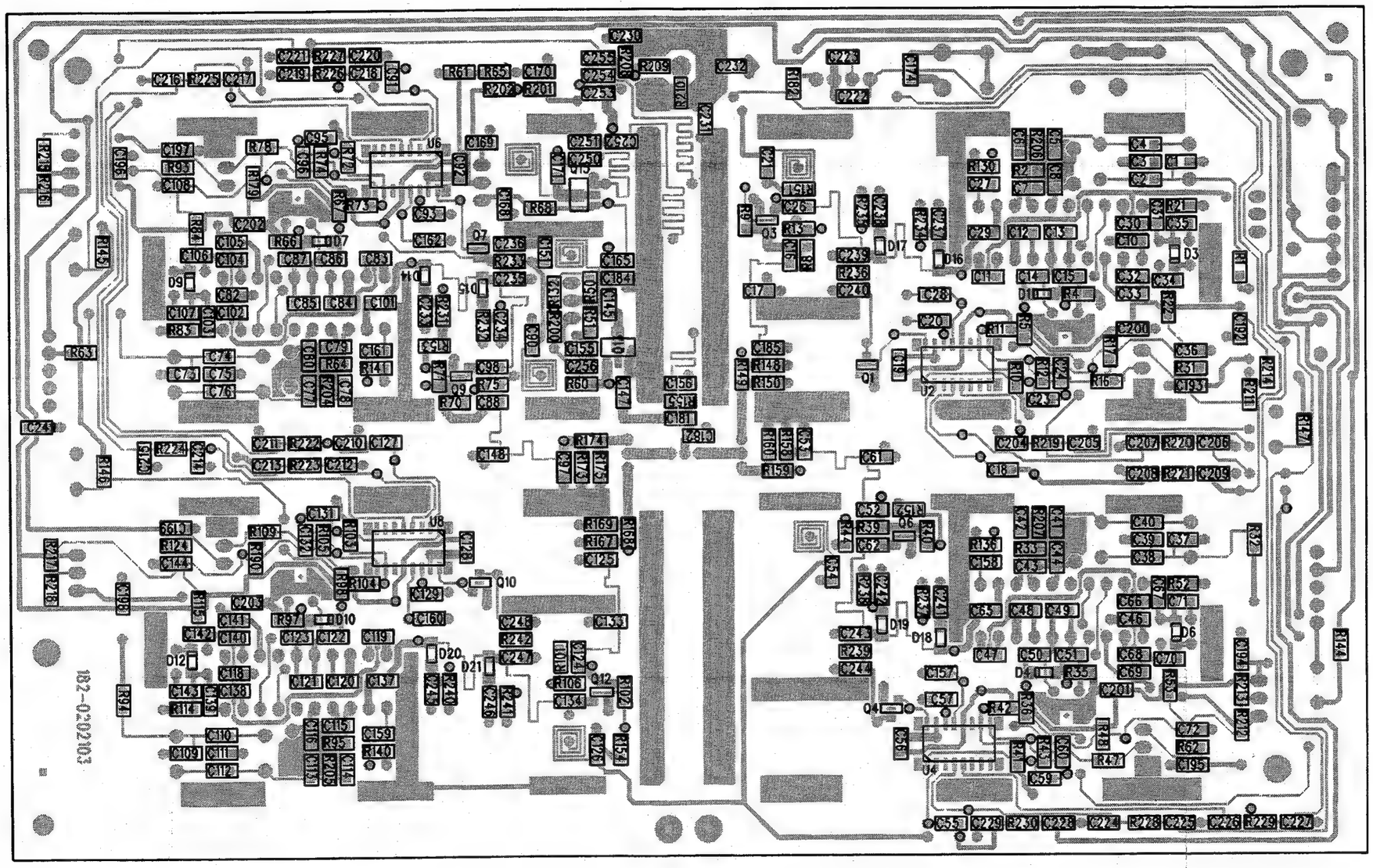
IMPORTANT

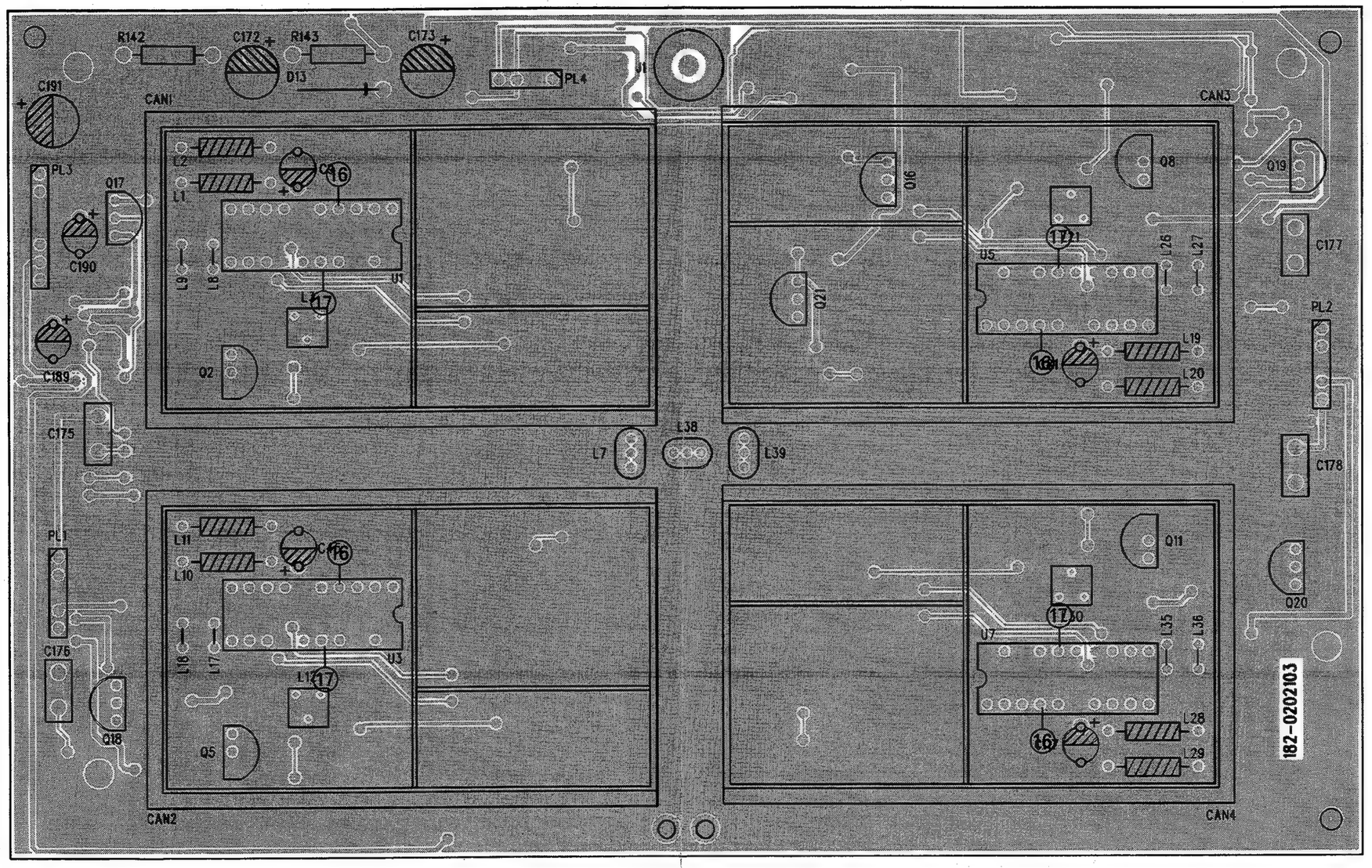
NOTE 1: STATUS OF THE PRODUCT

The main PCB described in this manual is at Revision A1. The PCB's part number is marked on the component side of the PCB. This number can be read in area H3 of the component ident diagram in this manual, where revision A1 is denoted by the characters 101 at the end of the part number.

This manual includes information from all Engineering Change Orders (ECOs) and Production Change Orders (PCOs) up to and including ECO S000332 provided that these had an effectivity date on or before 1.12.93. All ECO/PCO's which had an effectivity date after 1.12.93 are not included in the main pages of this manual but may be included in the Late Changes section (see above).

A	B	C	D
1			1
2			2
3			3
A	B	C	D




R142
C172
R143
C173
D13
PL4
C191
CAN1
CAN3
PL3
Q17
C190
L2
L1
C9
U1
L9
L8
L17
Q2
C189
C175
L38
L7
L39
PL2
C177
C178
Q16
Q8
Q19
Q21
U5
L26
L27
L19
L20
PL1
C176
Q18
L11
L10
C16
U3
L16
L17
L12
Q5
Q11
Q20
U7
L35
L36
L28
L29
182-0202103
CAN2
CAN4
PL7PL8

U102	PIN	HI	LOW
	4	EXT	INT
	5	NORM	INV
	6	FLAT/MAC	PAL
	7	NORM	OPT
	14	ST	MONO
	13	50uS	J17
	12	EXT	INT
	11	PANDA	50uS/J17

U202	PIN	HI	LOW
	4	EXT	INT
	5	NORM	INV
	6	FLAT/MAC	PAL
	7	NORM	OPT
	14	ST	MONO
	13	50uS	J17
	12	EXT	INT
	11	PANDA	50uS/J17

UNDERBOARD LINK TO D203

UNDERBOARD LINK TO PL2 PIN3

0V = Normal B.W.

INTERNAL / EXTERNAL VIDEO

DECODER VIDEO I/P

BASE BAND VIDEO OUT

PAL / FLAT

AUDIO O/P

AUDIO I/P

DECODER STATUS

UNDERBOARD LINK TO MOD200

RETROFITTED

AUDIO PANDER EXPANDER

DE-EMP SELECTION

INT / EXT AUDIO

U102	PIN	HI	LOW
	4	EXT	INT
	5	NORM	INV
	6	FLAT/MAC	PAL
	7	NORM	OPT
	14	ST	MONO
	13	50uS	J17
	12	EXT	INT
	11	PANDA	50uS/J17

AUDIO PANDER EXPANDER

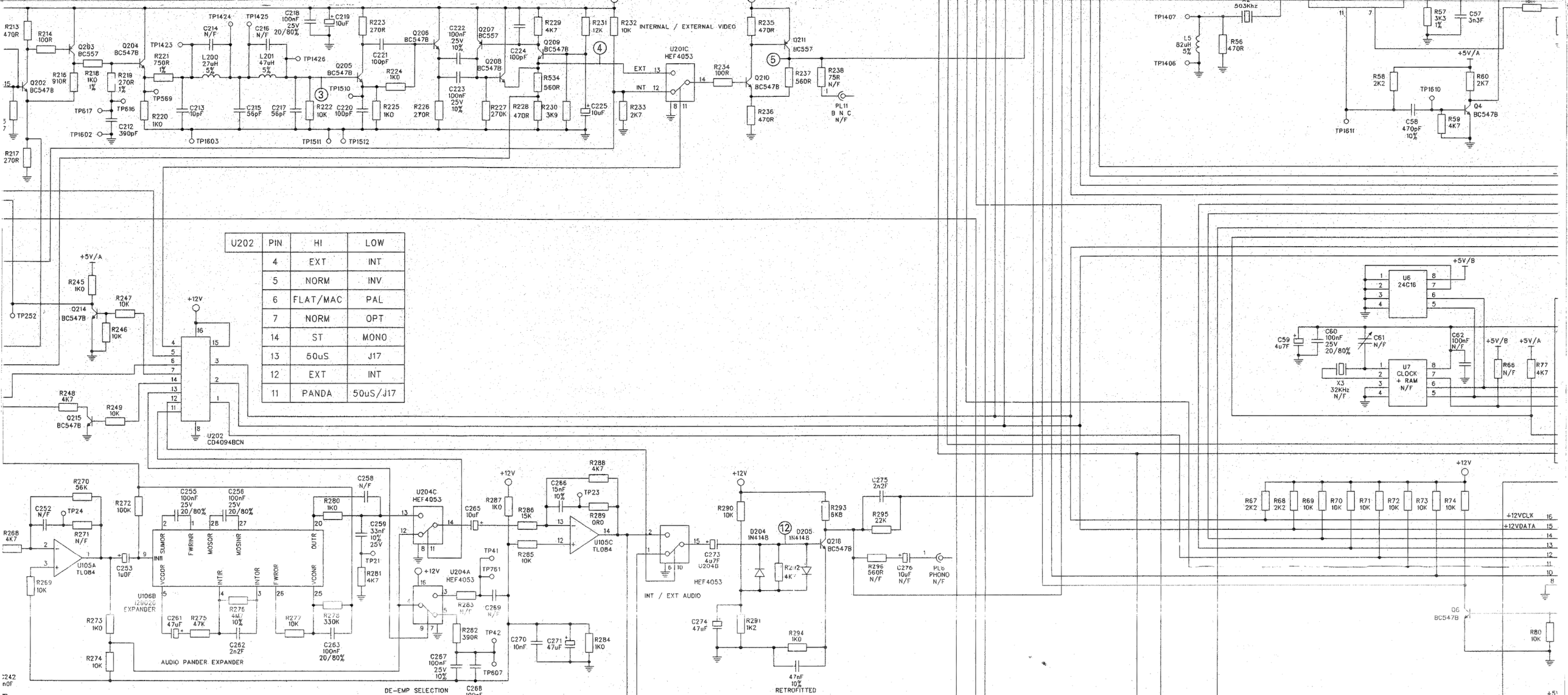
DE-EMP SELECTION

INT / EXT AUDIO

RETROFITTED

CAUTION

MONITOR OUTPUT DUAL PHONO AUDIO



U202	PIN	HI	LOW
	4	EXT	INT
	5	NORM	INV
	6	FLAT/MAC	PAL
	7	NORM	OPT
	14	ST	MONO
	13	50uS	J17
	12	EXT	INT
	11	PANDA	50uS/J17

NOTE

All 0805 Resistors are 5% 0W1 unless otherwise stated.
All 0805 Capacitors are 50V 5% unless otherwise stated.
All Electrolytic Capacitors are 16V unless otherwise stated.
All Zener Diodes are 5% 400mW unless otherwise stated.
N/F = Not Fitted.

	CHIP PINS U4		PORT 1 BITS	
	9	10	6	7
CHANNEL 1	12V	12V	L	L
CHANNEL 2	12V	0V	L	H
CHANNEL 3	0V	12V	H	L
CHANNEL 4	0V	0V	H	H

CHIP PINS U8	PIN	PORT Q	PIN
0	13		21
1	14	DEC STAT 2	22
2	15	DEC STAT 3	23
3	16	DEC STAT 4	24
4	17	AUD 1	25
5	18	AUD 2	26
6	19	AUD 3	27
7	20	AUD 4	28
		NIBBLE PROG	BY

3 2 1

D C

T2

RETROFITTED

TO MODULATORS (181-0202101-A)

PL5-1 AUDIO-1
PL5-2 VIDEO-1
PL5-3 GND
PL5-4 VIDEO-2
PL5-5 AUDIO-2

UNDERBOARD LINK TO Q111

DERBOARD LINK TO 5 PIN 2

PL12 B N C N/F

+27V 47uH 5% TP208 TP209 R21 15K TP1460 C11 100uF 35V C10 220nF TP1459 D11 BYV95A

+18V TP1400 L1 100uH 1A TP1399 TP1578 D12 BYV95A TP1577 TP1494 TP1457 C15 100uF 35V C14 2200uF 25V 20% C13 220nF C12 330pF 10% TP1495 TP1458

+12V TP1622 +10V TP1624 R22 WIRE LINK R538 68R 0W25 D17 IN4007 D15 IN4007 L2 100uH 1A TP1401 TP1580 D13 BYW98-50 TP1579 D16 IN4007 TP1402 TP1461 D18 9V1 1W3 C21 N/F TP1625 C20 220nF C19 N/F TP1623 C18 2200uF 25V 20% TP1462 C17 220nF C16 330pF 10%

+5V/B TP1616 +5V TP1404 TP1409 TP1408 TP1463 TP1581 D14 BYW98-50 LK17 100uH 1A C26 N/F C25 1000uF L3 100uH 1A C24 2200uF 25V 20% C23 220nF TP1615 TP1464 BYW98-50 RETRO FITTED C22 330pF 10% TP1403 TP1582

UNDERBOARD LINK TO PL2 PIN 1

+5V/A LK23 100uH 1A UNDERBOARD LINK TO C109 +VE

CAUTION

+5V/B UNDERBOARD LINK TO LK17 C69 N/F PL2-1 PL2-2

UNDERBOARD LINK TO MOD200 GND

+12V C27 N/F PL2-3 PL2-4 PL2-5 PL2-6

+27V PL2-7

TP1466 TP1467 4 X IN4007 T1 MAINS FILTER R1 10R 10% 2W0 FS1 F1AL SK1-2 SK1-1 SK1 MAINS INPUT 180V TO 280V CAUTION

D1 D2 D3 D4 C1 100nF CLASS X 250V 20%

R2 100K 2W0 C2 100uF 400v 20% TP1468 TP1470 TP1613 TP1614 TP1465

D5 BYV96D R3 2K2 2W0 D6 BYV96D R4 1K0 10% 5W0 Q1 MJE 18004 R9 15R 0W25 U1 TEA2018 C3 1n0F 2KV 10% R5 220R R7 4K7 R6 1R0 1W0 R8 1K0 1% R10 2K0 1% R11 22K R12 47K C4 1n2F R13 100R 0W25 CAUTION

TP1629 D7 IN4148 R14 15R 0W25 D8 IN4148 R15 68R 0W25 C5 1000uF C6 22uF R16 22K C7 10uF 25V C8 10uF 25V D10 3V9 TP1630 TP1637 R17 4R7 0W25 D9 1N4148 R18 470R 1% 0W25 R19 470R 1% 0W25 TP1636 TP1469 TP1612 R20 10M VR37 0W5 C9 4n7F CLASS Y 250V 20% CAUTION CAUTION

+5V/A R35 1K5 U3C HEF4053 R36 4K7 R37 4K7 U3A HEF4053 C70 100nF 25V 20/80% R38 1K5

C28 100nF 25V 20/80% C29 10uF R27 3K3 C30 4u7F R28 1K2

U3B HEF4053 TP1277 TP1278 Q5 BC547B R85 56R MONITOR OUTPUT DUAL PHONO VIDEO SK2-3 D21 9V1 R63 1K0 R64 1K0 TP838 TP839

CE CLK SDA VIDOUT CHAR VIDIN COMP SYNC U2 M50555 Q2 ZVN3306A R94 4K7 TP827 R95 8K2 TP52 TP815 C39 100nF 25V 20/80% R29 2K2 TP816 R30 1K2 R31 2K49 1% TP818 R32 1K8 C38 3u3F R33 2K49 1% R34 2K2

R193 6K8 R195 22K C175 2n2F Q118 BC547B R196 560R N/F C176 10uF N/F PL9 PHONO N/F

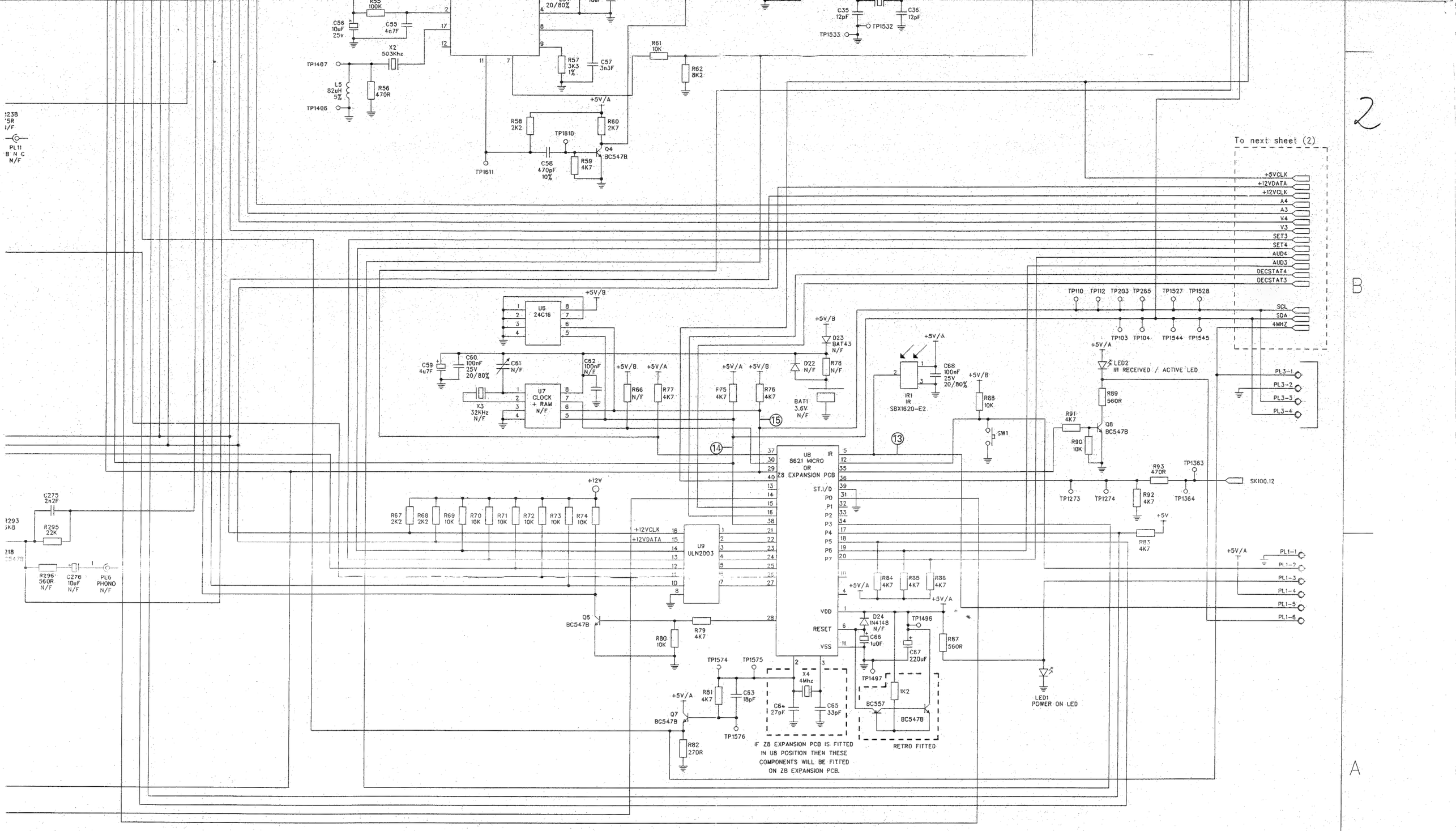
U4 HEF4052 C42 1u0F R39 470R C40 10uF R43 1K8 C41 10uF R42 1K5 D19 1N4148 D25 1N4148 R44 1K5 R45 N/F R41 680R Q3 BC557 R40 68K C43 22uF D20 9V1 R46 4K3 1% R47 10K MONITOR OUTPUT DUAL PHONO AUDIO SK2-2 SK2-1

+12V R48 2K7 R50 2K7 R51 100K R49 2K7 C44 3n3F C45 68nF 10% 25V C47 100nF 25V 20/80% C46 10uF

U5 TEA2130 TP1498 C48 220nF C49 100pF C50 220nF C51 1n5F 10% R52 2K7 R537 470K C52 10uF R53 4K7 C53 22nF 10% R54 470K C54 4n7F TP1499 R55 100K C55 C56

TP812 TP813 TP811 R23 2K7 R25 1K5 C31 220nF R24 2K2 C32 220nF R26 3K3 TP1289 VT HZ

L4 15uH 5% TP96 TP1405 TP1590 TP1592 C33 33pF TP1591 C34 33pF TP1531 X1 17.734Mhz TP1534 C35 12pF C36 12pF C37 2u2F



NOTE

0805 Resistors are 5% 0W1 unless otherwise stated.
0805 Capacitors are 50V 5% unless otherwise stated.
Electrolytic Capacitors are 16V unless otherwise stated.
Zener Diodes are 5% 400mW unless otherwise stated.
' = Not Fitted.

	CHIP PINS U4		PORT 1 BITS	
	9	10	6	7
CHANNEL 1	12V	12V	L	L
CHANNEL 2	12V	0V	L	H
CHANNEL 3	0V	12V	H	L
CHANNEL 4	0V	0V	H	H

CHIP PINS U8	PIN	PORT 0	PIN	PORT 1	PIN	PORT 2	PIN	PORT 3
0	13		21	12V CLK	31	DEC STAT 1	5	IR I/P
1	14	DEC STAT 2	22	12V DATA	32		39	
2	15	DEC STAT 3	23	SET 4	33		12	IR INHIBIT
3	16	DEC STAT 4	24	SET 3	34	STATION ID	30	TIMER
4	17	AUD 1	25	SET 2	35	IRLED	29	SCL
5	18	AUD 2	26	SET 1	36	TESTER I/P - O/P	10	
6	19	AUD 3	27	MONSEL 1	37	GRAPHICS CE	40	+5VCLK
7	20	AUD 4	28	MONSEL 2	38	SDA	4	
	NIBBLE PROG		BYTE PROG		BIT PROG		4 I/P + 4 O/P	

D

C

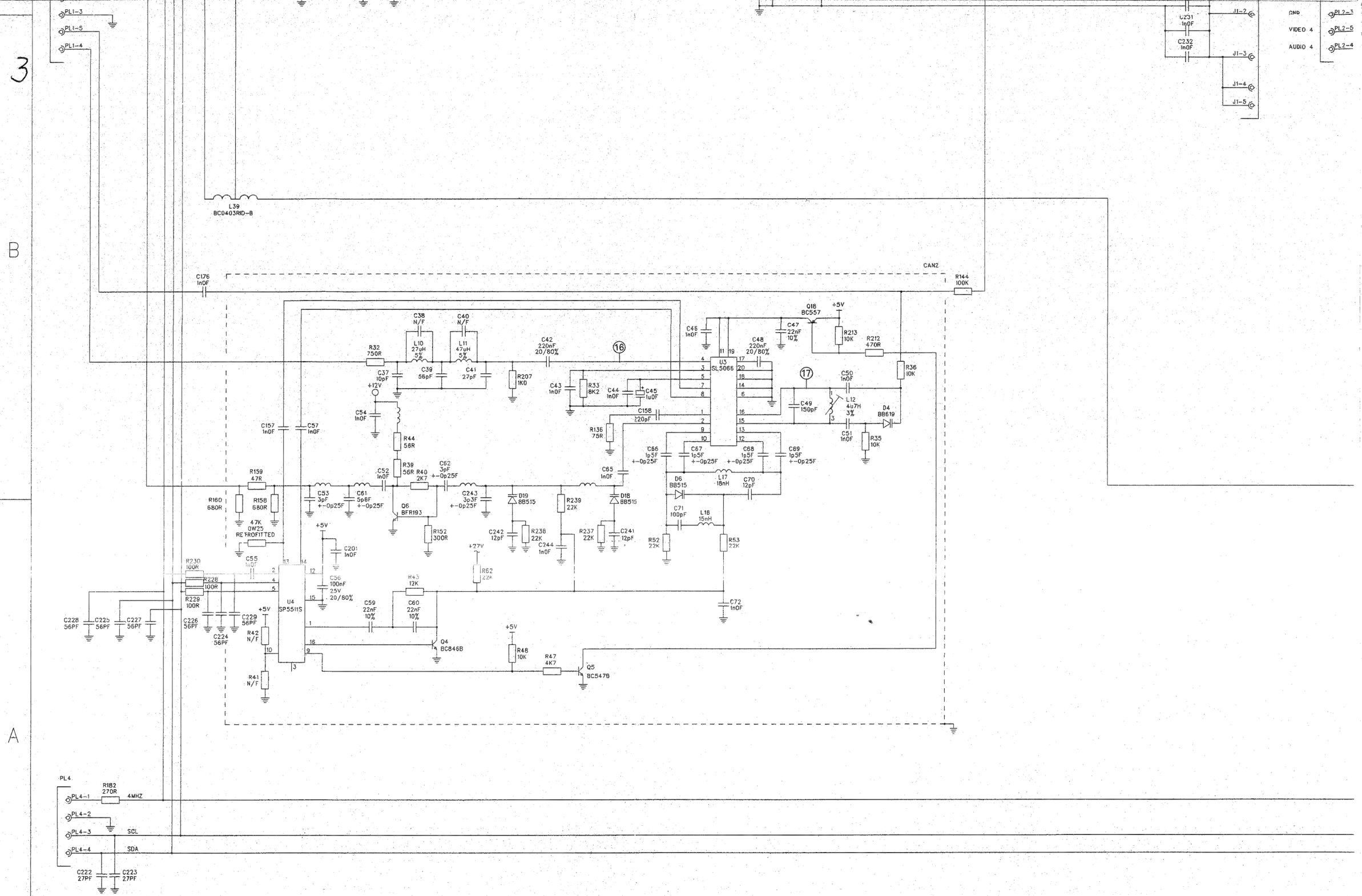
PL3
PL3-1
PL3-2
PL3-3
PL3-4
PL3-5
PL3-6
PL3-7
+5V
C191 1000UF
C192 1nOF
C194 1nOF
C196 1nOF
C198 1nOF
C249 N/F
+12V
C190 10UF
+27V
C189 10UF
C193 1nOF
C195 1nOF
C197 1nOF
C199 1nOF

CAN1
C175 1nOF
R147 100K
C2 N/F
C4 N/F
L1 27uH 5%
L2 47uH 5%
R1 750R
C6 220nF 20/80%
C1 10pF
C3 56pF
C5 27pF
R206 1K0
C7 1nOF
R2 8K2
C8 1nOF
C9 1uOF
C21 1nOF
R13 56R
C28 1nOF
C20 1nOF
C27 220pF
R130 75R
U1 SL5066
C10 1nOF
C11 22nF 10%
C12 220nF 20/80%
Q17 BC557
+5V
R214 10K
R211 470R
R5 10K
C13 150pF
C14 1nOF
L3 4u7H 3%
C15 1nOF
D1 BB619
R4 10K
C30 1p5F +-0p25F
C31 1p5F +-0p25F
C32 1p5F +-0p25F
C33 1p5F +-0p25F
L8 18nH
C34 12pF
D3 BB515
C35 100pF
L9 15nH
R21 22K
R22 22K
C36 1nOF
R8 56R
R9 2K7
C26 3pF +-0p25F
C16 1nOF
C29 1nOF
R149 47R
R150 680R
R148 680R
47K OW25 RETROFITTED
C185 3pF +-0p25F
C17 5p6F +-0p25F
Q3 BFR193
R151 300R
C239 3p3F +-0p25F
D17 BB515
D16 BB515
R236 22K
C238 12pF
R235 22K
C240 1nOF
R234 22K
C237 12pF
+27V
R31 22K
C200 1nOF
C18 1nOF
C19 100nF 25V 20/80%
U2 SP5511S
R12 12K
C23 22nF 10%
C24 22nF 10%
Q1 BC848B
R11 N/F
R10 0R0
R17 10K
R16 4K7
Q2 BC547B
C204 56PF
C208 56PF
C207 56PF
C205 56PF
C209 56PF
C206 56PF
R221 100R
R220 100R
R219 100R
L7 BC0403RID-B

+12V
C151 1nOF
R132 47R
R200 47R
R50 1K2
R51 1K8
Q21 BC557
C256 N/F
C155 1nOF
R60 8K2
C145 1nOF
C165 1p8F +-0p25F
C184 1p8F +-0p25F
Q13 BFQ193
R155 100R
C181 4p7F +-0p25F
C182 5p6F +-0p25F
C156 N/F
C147 1nOF
L38 BC0403RID-B
R201 47R
R202 47R
C170 1nOF
R65 1K2
Q16 BC557
C169 1nOF
R68 8K2
Q15 BFQ193
R61 1K8
C168 1nOF
C171 5p6F +-0p25F
C251 4p7F +-0p25F
C253 6p8F +-0p25F
C255 10pF
R209 27R
C250 27pF
C252 8p2F +-0p25F
C254 12pF
R208 470R
R210 470R
PHONO SOCKET
J1-1
J1-2
C230 1nOF
LZ31 1nOF

PL1
PL1-1
PL1-2
PL1-3
PL1-5

PL2
AUDIO 3
VIDEO 3
GND
VIDEO 4
PL2-1
PL2-2
PL2-3
PL2-5


PL1-3
PL1-5
PL1-4
L39
BC0403RID-B
J1-2
J1-3
J1-4
J1-5
C231
1nOF
C232
1nOF
GND
VIDEO 4
AUDIO 4
PL2-3
PL2-5
PL2-4
CAN2
C176
1nOF
R144
100K
C38
N/F
C40
N/F
L10
27uH
5%
L11
47uH
5%
R32
750R
C42
220nF
20/80%
16
C37
10pF
+12V
C39
56pF
C41
27pF
R207
1K0
C43
1nOF
R33
8K2
C44
1nOF
C45
1uOF
U3
SL5066
C46
1nOF
C48
220nF
20/80%
Q18
BC557
+5V
C47
22nF
10%
R213
10K
R212
470R
R36
10K
17
C50
1nOF
C49
150pF
L12
4u7H
3%
D4
BB619
C51
1nOF
R35
10K
C158
220pF
R136
75R
C54
1nOF
C157
1nOF
C57
1nOF
R44
56R
R39
56R
R40
2K7
C52
1nOF
C62
3pF
+-0p25F
C65
1nOF
C66
1p5F
+-0p25F
C67
1p5F
+-0p25F
C68
1p5F
+-0p25F
C69
1p5F
+-0p25F
D6
BB515
L17
18nH
C70
12pF
C71
100pF
L18
15nH
R52
22K
R53
22K
R159
47R
R160
680R
R158
680R
47K
0W25
RE-PROFITTED
C53
3pF
+-0p25F
C61
5p6F
+-0p25F
Q6
BFR193
R152
300R
C243
3p3F
+-0p25F
D19
BB515
C242
12pF
R238
22K
C244
1nOF
R239
22K
D18
BB515
R237
22K
C241
12pF
+27V
R62
22K
C72
1nOF
R230
100R
C55
1nOF
R228
100R
R229
100R
U4
SP5511S
C56
100nF
25V
20/80%
R43
12K
C59
22nF
10%
C60
22nF
10%
Q4
BC846B
+5V
R48
10K
R47
4K7
Q5
BC547B
C228
56PF
C225
56PF
C227
56PF
C226
56PF
C224
56PF
C229
56PF
+5V
R42
N/F
R41
N/F
C201
1nOF
PL4
R182
270R
4MHZ
PL4-1
PL4-2
PL4-3
SCL
PL4-4
SDA
C222
27PF
C223
27PF

CAN1

R147 100K

Q17 BC557 +5V

C10 1n0F

C11 22nF 10%

R214 10K

R211 470R

C12 220nF 20/80%

U1 SL5066

11 19

17

C14 1n0F

R5 10K

C13 150pF

L3 4u7H 3%

D1 BB619

C15 1n0F

R4 10K

C31 1p5F +-0p25F

C32 1p5F +-0p25F

C33 1p5F +-0p25F

D3 BB515

L8 18nH

C34 12pF

C35 100pF

L9 15nH

R21 22K

R22 22K

C36 1n0F

C177 1n0F

C74 N/F

C76 N/F

L19 27uH 5%

L20 47uH 5%

R63 750R

C73 10pF +12V

C75 56pF

C77 27pF

R204 1K0

C78 220nF 20/80%

16

C79 1n0F

R64 8K2

C80 1n0F

C81 1u0F

C82 1n0F

C83 22nF 10%

C84 220nF 20/80%

U5 SL5066

C161 220pF

R141 75R

C102 1p5F +-0p25F

C103 1p5F +-0p25F

C104 1p5F +-0p25F

C105 1p5F +-0p

D9 BB515

L26 18nH

C106 12pF

C107 100pF

L27 15nH

R83 22K

R84 22K

C108 1n0F

C162 1n0F

C93 1n0F

C90 1n0F

R75 56R

R70 56R

R71 2K7

C98 3pF +-0p25F

C88 1n0F

C101 1n0F

R174 47R

R175 680R

R173 680R

C97 3pF +-0p25F

C148 5p6F +-0p25F

Q9 BFR193

C235 3p3F +-0p25F

D15 BB515

D14 BB515

R233 22K

R153 300R

C234 12pF

R232 22K

C236 1n0F

R231 22K

C233 12pF

47K 0W25 RETROFITTED

+5V

C202 1n0F

+27V

R93 22K

C91 1n0F

C92 100nF 25V 20/80%

R74 12K

R227 100R

R226 100R

C220 56PF

C218 56PF

C217 56PF

U6 SP5511S

R73 15K

R72 N/F

C95 22nF 10%

C96 22nF 10%

Q7 BC846B

R179 10K

R78 4K7

Q8 BC547B

C108 1n0F

C216 56PF

C219 56PF

C221 56PF

+12V

R201 47R

C170 1n0F

R65 1K2

R202 47R

Q16 BC557

C169 1n0F

R68 8K2

Q15 BFQ193

R61 1K8

C168 1n0F

C171 5p6F +-0p25F

C251 4p7F +-0p25F

C253 6p8F +-0p25F

C255 10pF

R209 27R

PHONO SOCKET

J1-1

C250 27pF

C252 8p2F +-0p25F

C254 12pF

R208 470R

R210 470R

C230 1n0F

PL2

AUDIO 3

VIDEO 3

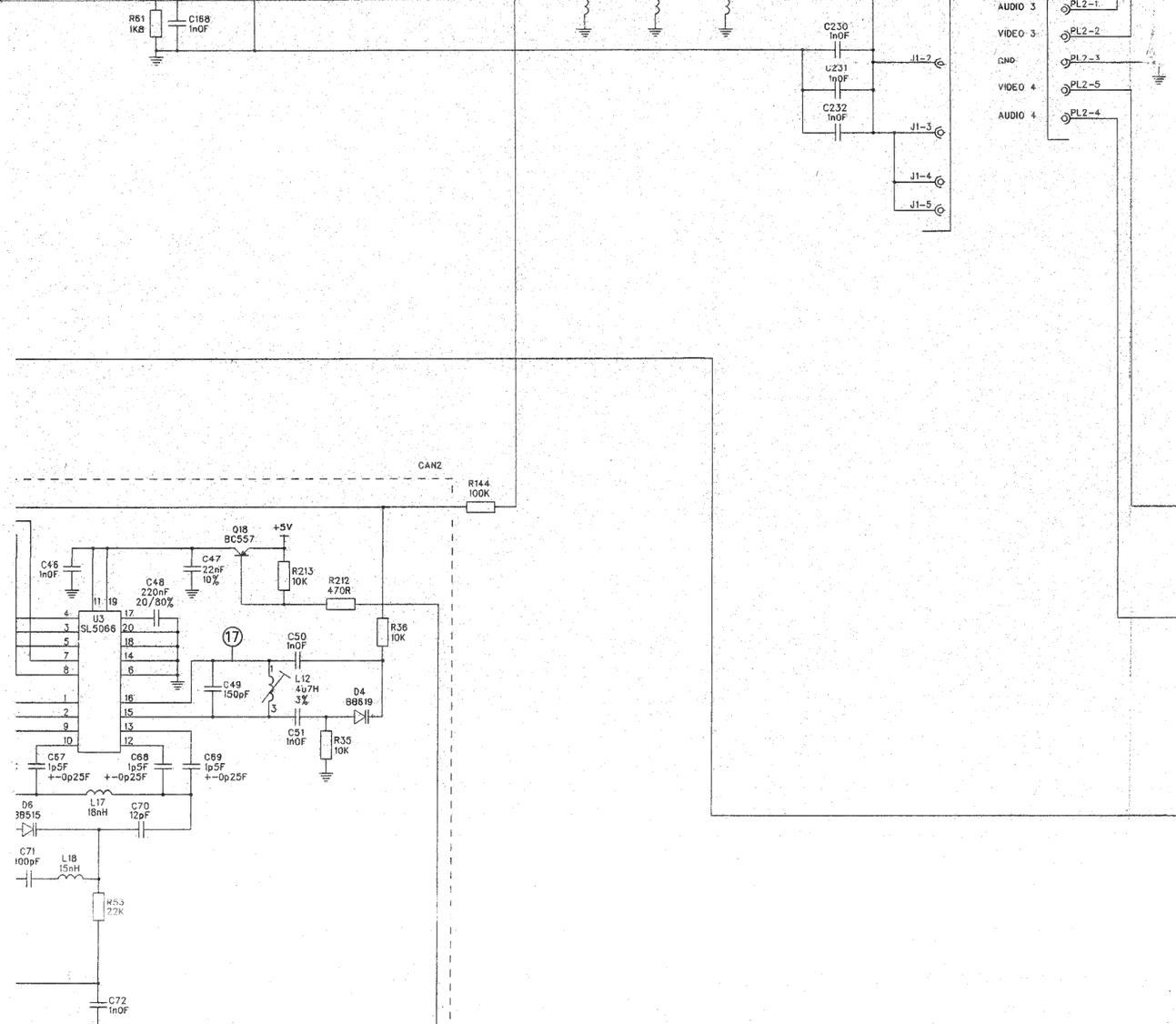
PL2-1

PL2-2

+12V

R142 220R

R143 220R



NOTE

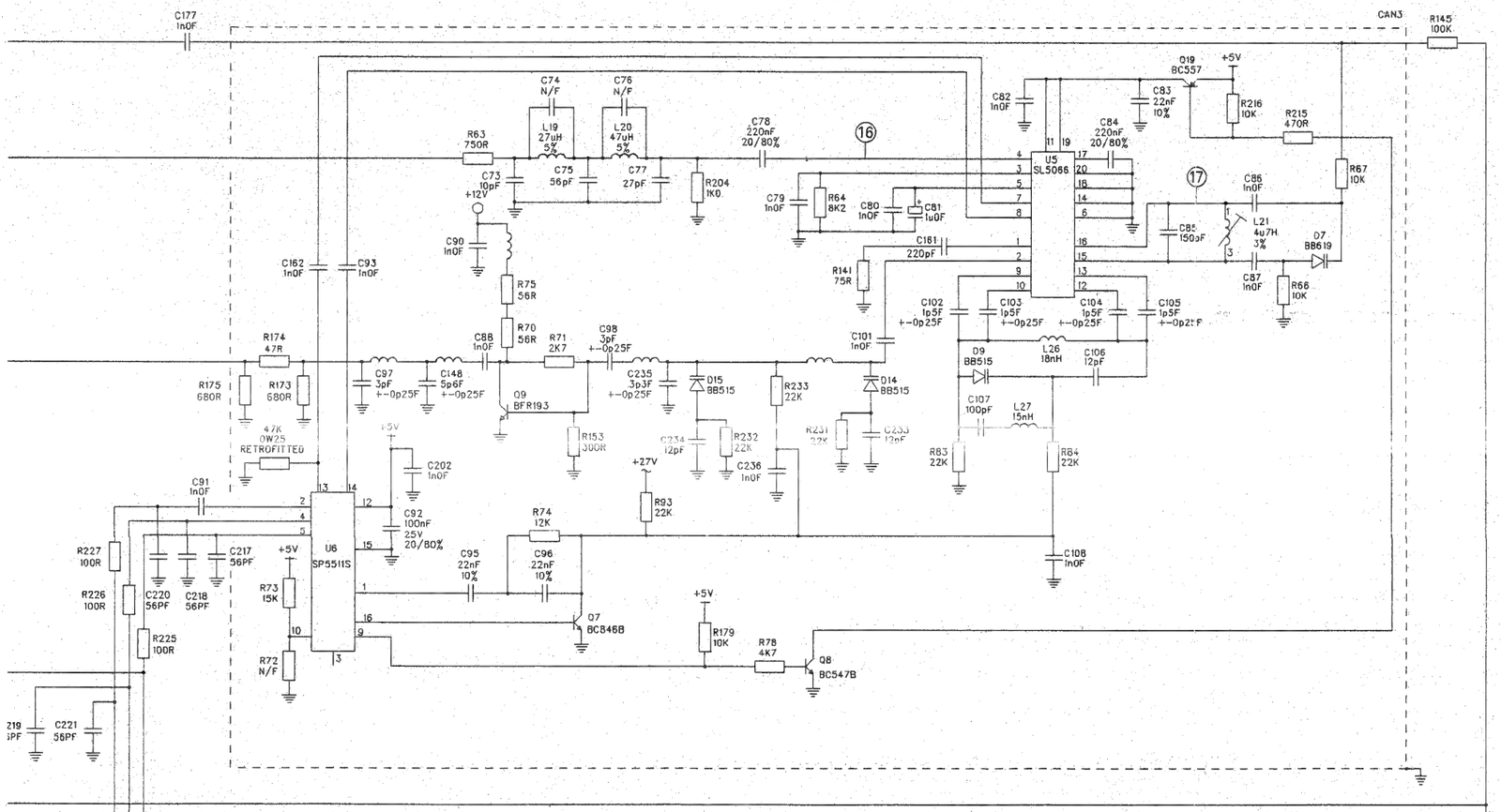
All 0805 Resisto

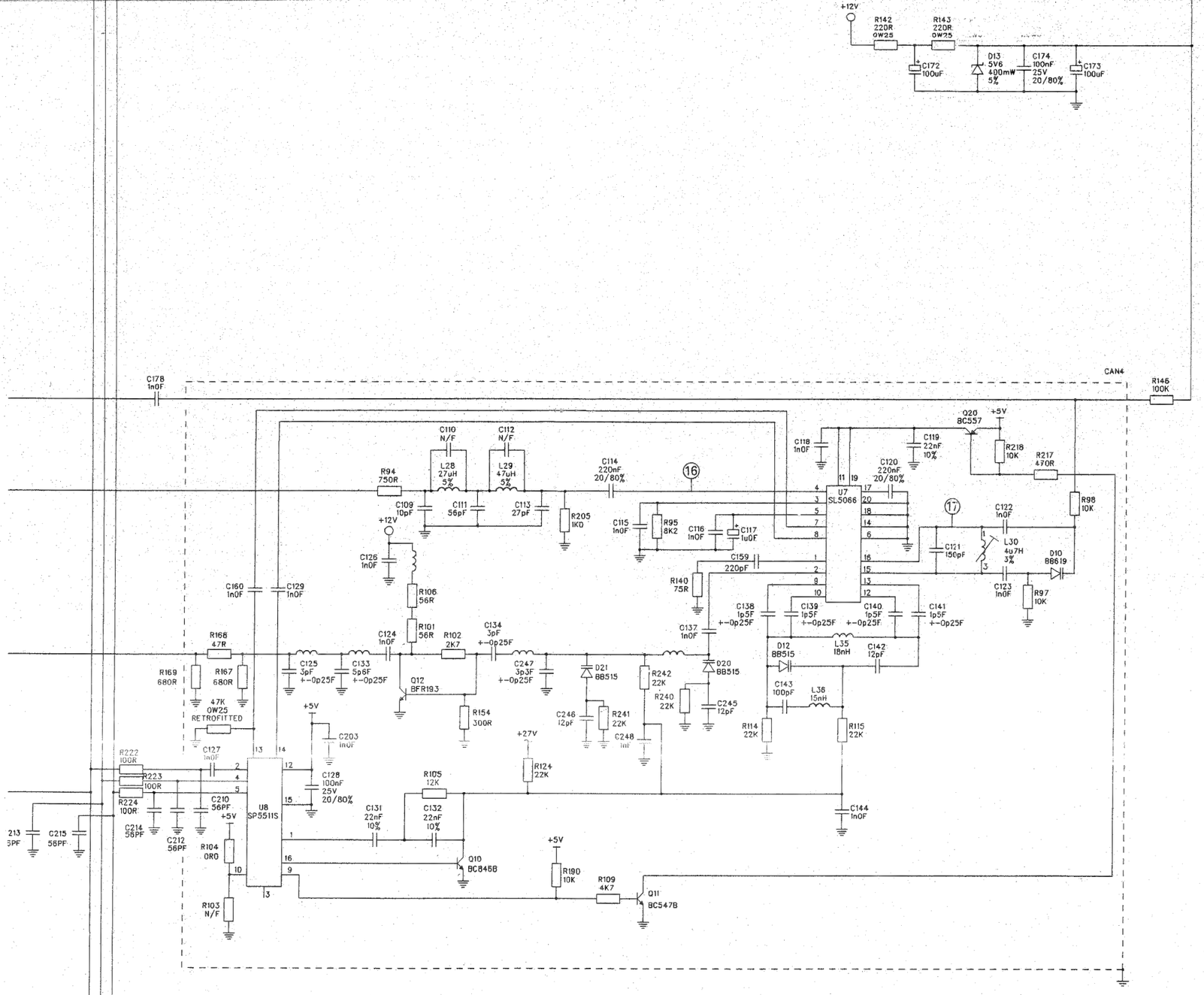
All 0805 Capacit

All Electrolytic C

N/F = Not Fitte

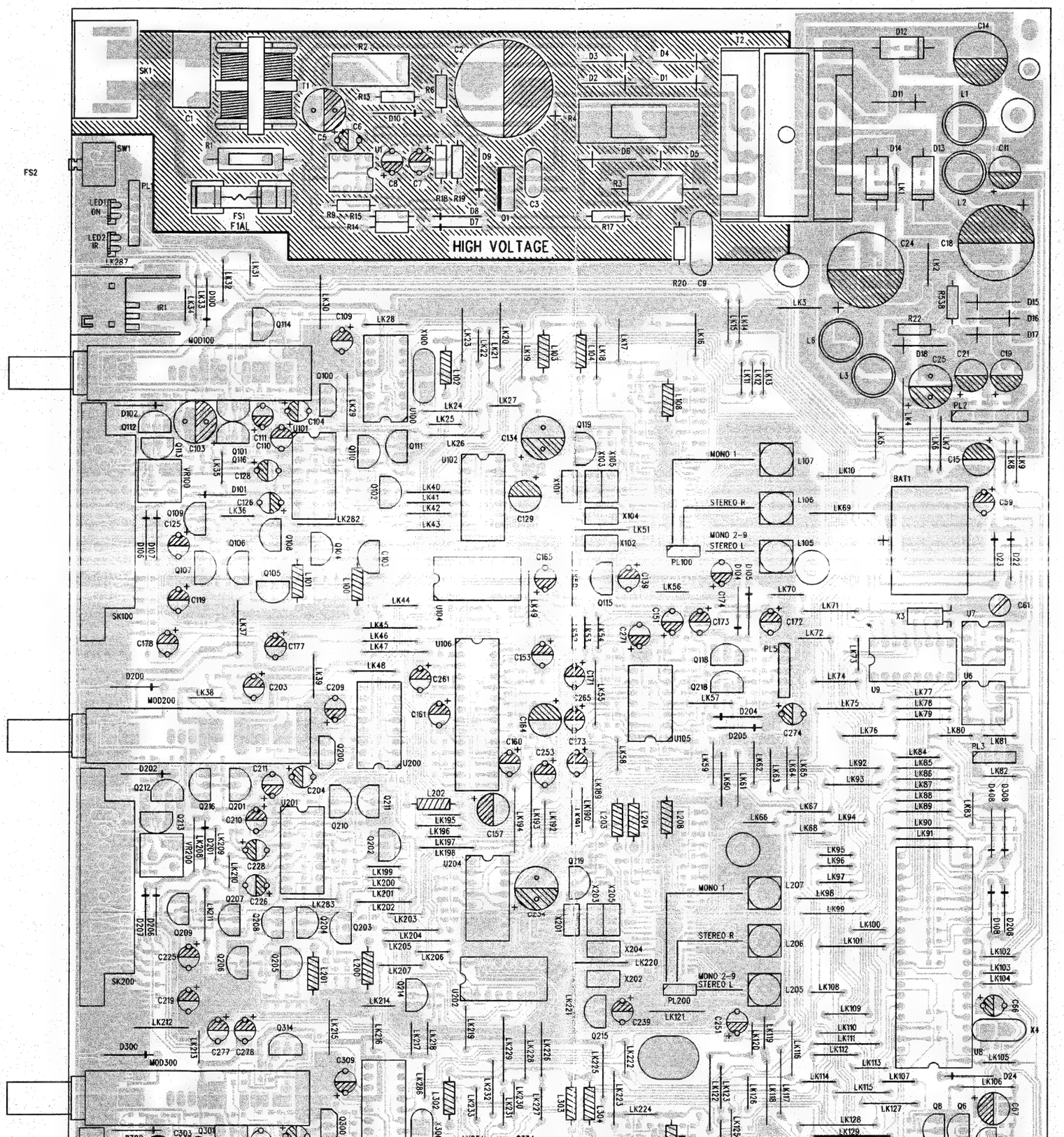
Inductors without

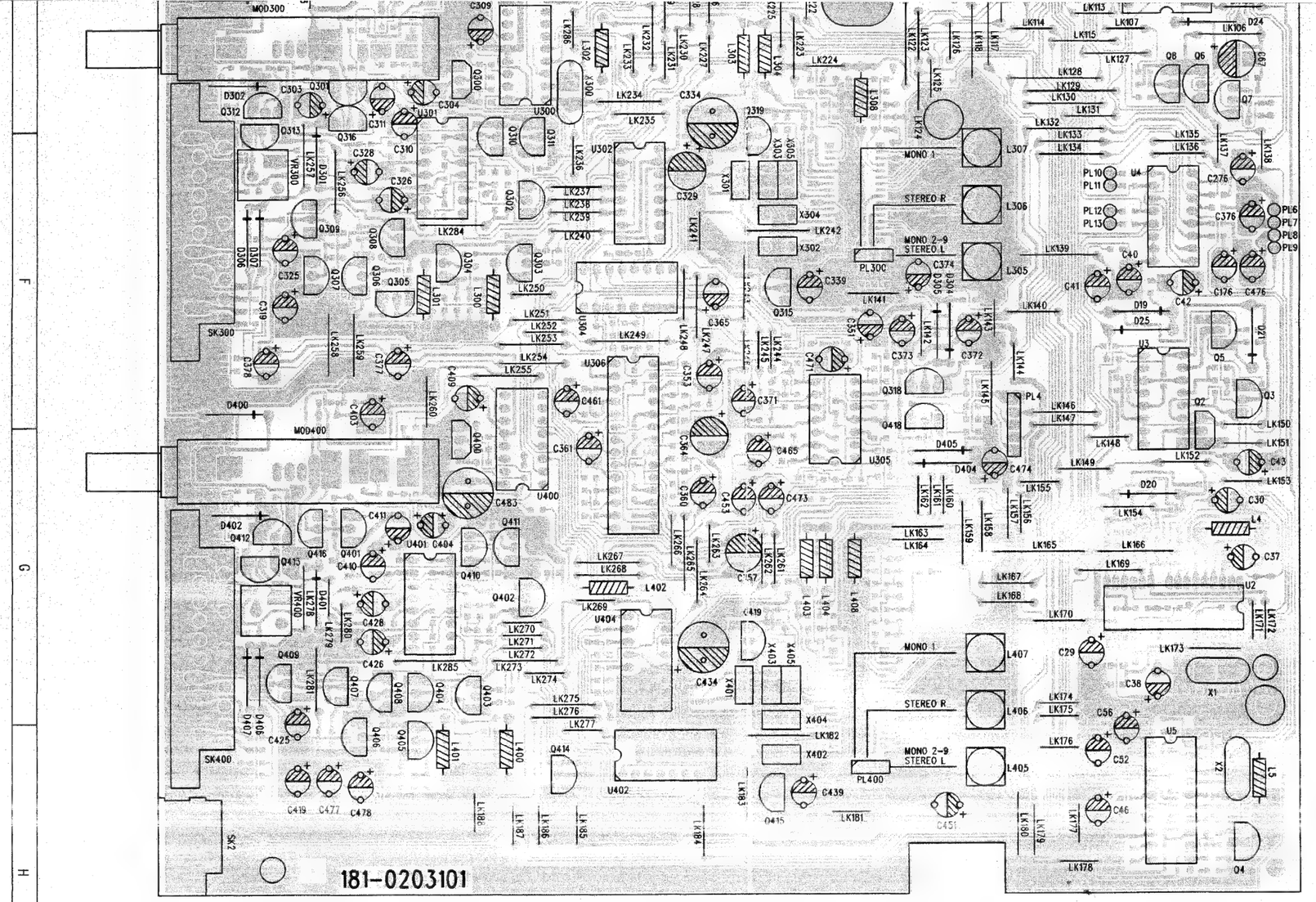

C177 1n0F
CAN3
R145 100K
C74 N/F
C76 N/F
L19 27uH 5%
L20 47uH 5%
R63 750R
C73 10pF +12V
C75 56pF
C77 27pF
R204 1K0
C78 220nF 20/80%
16
C82 1n0F
C83 22nF 10%
Q19 BC557
+5V
R216 10K
R215 470R
C84 220nF 20/80%
U5 SL5066
17
C86 1n0F
R67 10K
C79 1n0F
R64 8K2
C80 1n0F
C81 1u0F
C85 150pF
L21 4u7H 3%
D7 BB619
C161 220pF
C87 1n0F
R66 10K
R141 75R
C102 1p5F +-0p25F
C103 1p5F +-0p25F
C104 1p5F +-0p25F
C105 1p5F +-0p25F
C90 1n0F
R75 56R
C162 1n0F
C93 1n0F
R70 56R
C88 1n0F
R71 2K7
C98 3p9F +-0p25F
C101 1n0F
R174 47R
R175 680R
R173 680R
C97 3pF +-0p25F
C148 5p6F +-0p25F
Q9 BF R193
C235 3p3F +-0p25F
D15 BB515
D14 BB515
D9 BB515
L26 18nH
C106 12pF
R233 22K
C107 100pF
L27 15nH
47K 0W25 RETROFITTED
R153 300R
C234 12pF
R232 22K
C236 1n0F
R231 22K
C233 12pF
R83 22K
R84 22K
C202 1n0F
+27V
R93 22K
C91 1n0F
C92 100nF 25V 20/80%
R74 12K
C108 1n0F
R227 100R
R226 100R
R225 100R
C220 56PF
C218 56PF
C217 56PF
U6 SP5511S
R73 15K
C95 22nF 10%
C96 22nF 10%
Q7 BC846B
R179 10K
R78 4K7
Q8 BC547B
R72 N/F
C219 56PF
C221 56PF
+12V
R142 220R 0W25
R143 220R 0W25

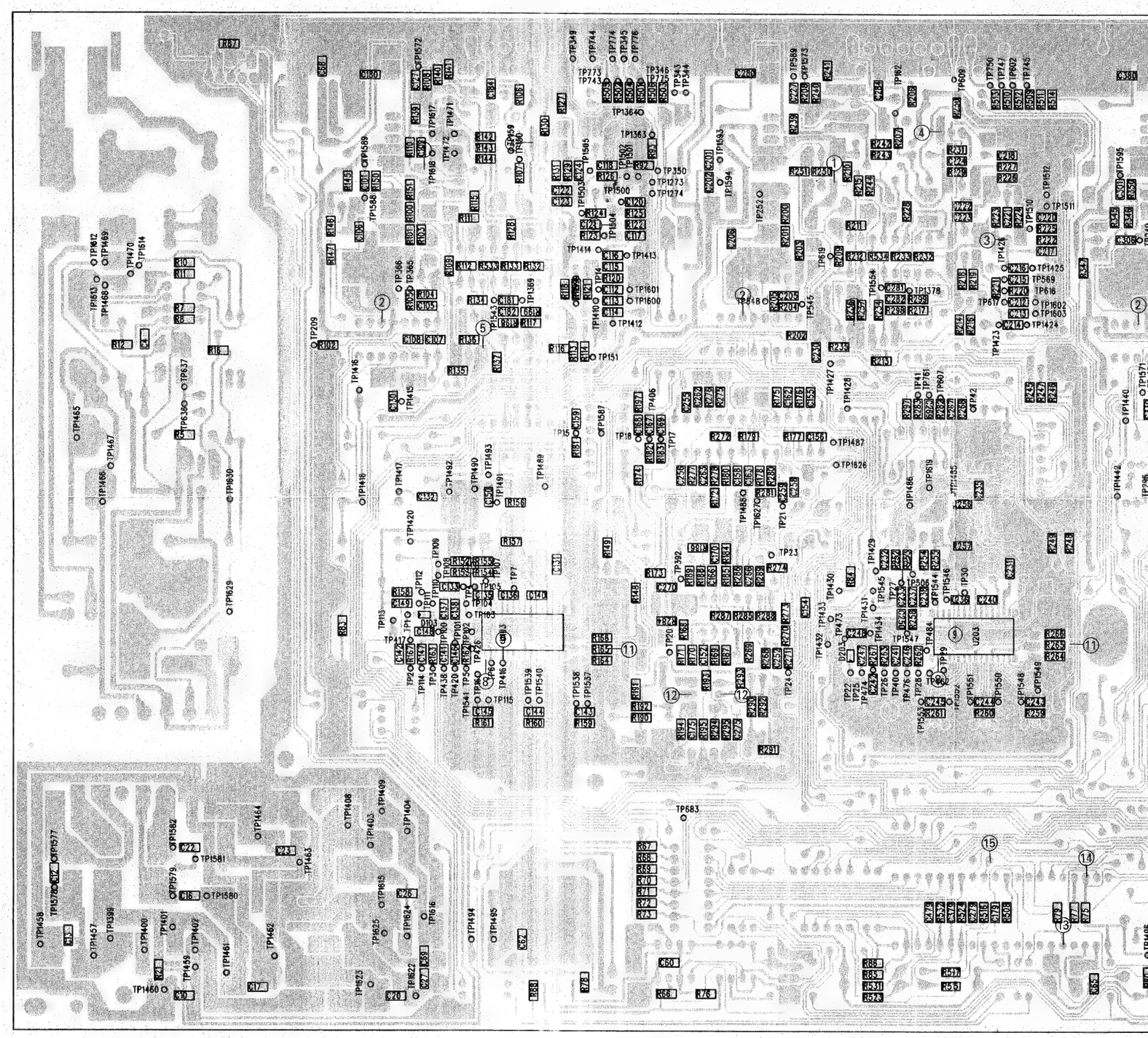


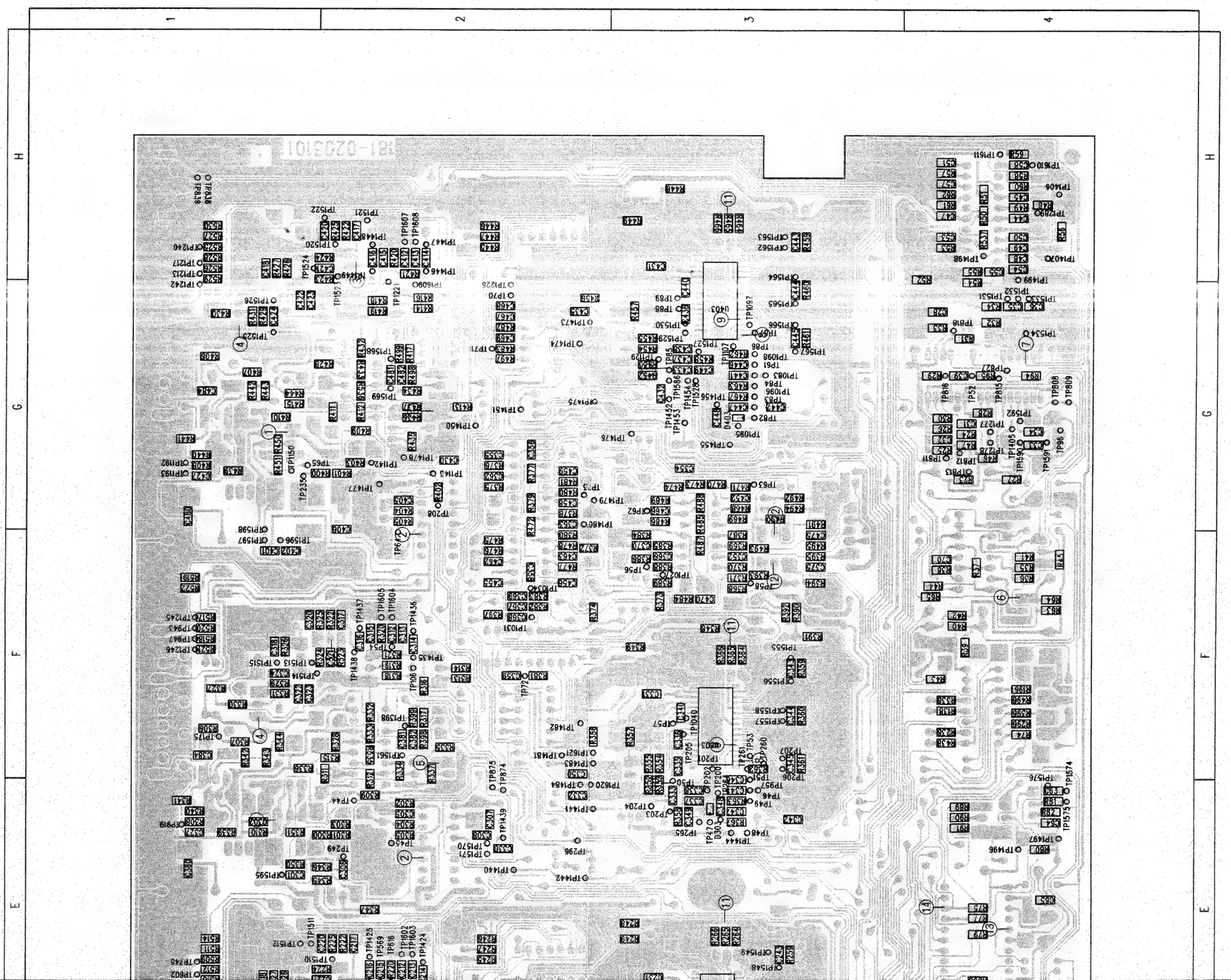
NOTE

All 0805 Resistors are 01W 5% unless otherwise stated.
All 0805 Capacitors are 50V 5% unless otherwise stated.
All Electrolytic Capacitors are 16V unless otherwise stated.
N/F = Not Fitted.
Inductors without Circuit References are printed as part of PCB design.


HIGH VOLTAGE
FS2
F1AL
SK1
SW1
PL1
LED1 ON
LED2 IR
IR1
T1
T2
FS1
SK100
SK200
SK300
BAT1
MONO 1
STEREO R
MONO 2-9
STEREO L
PL100
PL200
PL300
PL2
PL3
PL5
X1
X2
X3
X4
U1
U100
U101
U102
U104
U105
U106
U200
U201
U202
U204
U6
U7
U8
U9


MOD300
MOD400
SK300
SK400
SK2
U300
U302
U304
U306
U400
U402
U404
U305
U2
U3
U4
U5
MONO 1
STEREO R
MONO 2-9
STEREO L
PL300
PL400
181-0203101




1
2
3
4
H
G
F
E
181-020310I

U302	PIN	HI	LOW
	4	EXT	INT
	5	NORM	INV
	6	FLAT/MAC	PAL
	7	NORM	OPT
	14	ST.	MONO
	13	50uS	J17
	12	EXT	INT
	11	PANDA	50uS/J17

U402	PIN	HI	LOW
	4	EXT	INT
	5	NORM	INV
	6	FLAT/MAC	PAL
	7	NORM	OPT
	14	ST	MONO
	13	50uS	J17
	12	EXT	INT
	11	PANDA	50uS/J17

5 4 3 2

To next sheet (1)

U302	PIN	HI	LOW
	4	EXT	INT
	5	NORM	INV
	6	FLAT/MAC	PAL
	7	NORM	OPT
	14	ST	MONO
	13	50uS	J17
	12	EXT	INT
	11	PANDA	50uS/J17

AUDIO PANDER EXPANDER

DE-EMP SELECTION

INT / EXT AUDIO

INTERNAL / EXTERNAL VIDEO

TO MODULATORS (181-0202101-A)

RETROFITTED

U402	PIN	HI	LOW
	4	EXT	INT
	5	NORM	INV
	6	FLAT/MAC	PAL
	7	NORM	OPT
	14	ST	MONO
	13	50uS	J17
	12	EXT	INT
	11	PANDA	50uS/J17

AUDIO PANDER EXPANDER

DE-EMP SELECTION

INT / EXT AUDIO

INTERNAL / EXTERNAL VIDEO

3 2 1

D

C

TO MODULATORS (181-0202101-A)

PL4-1 AUDIO-3
PL4-2 VIDEO-3
PL4-3 GND
PL4-4 VIDEO-4
PL4-5 AUDIO-4

TP296

R338 75R N/F

PL13 B N C N/F

+5VCLK
V3
4MHZ
AUD3
SET3
A3
SCL
SDA
DECSTAT3
V4
AUD4
SET4
A4
DECSTAT4
+12VCLK
+12VDATA

To next sheet (1)

C375 2n2F

R393 6K8

R395 22K

(12) D305 IN4148

Q318 BC547B

R392 4K7

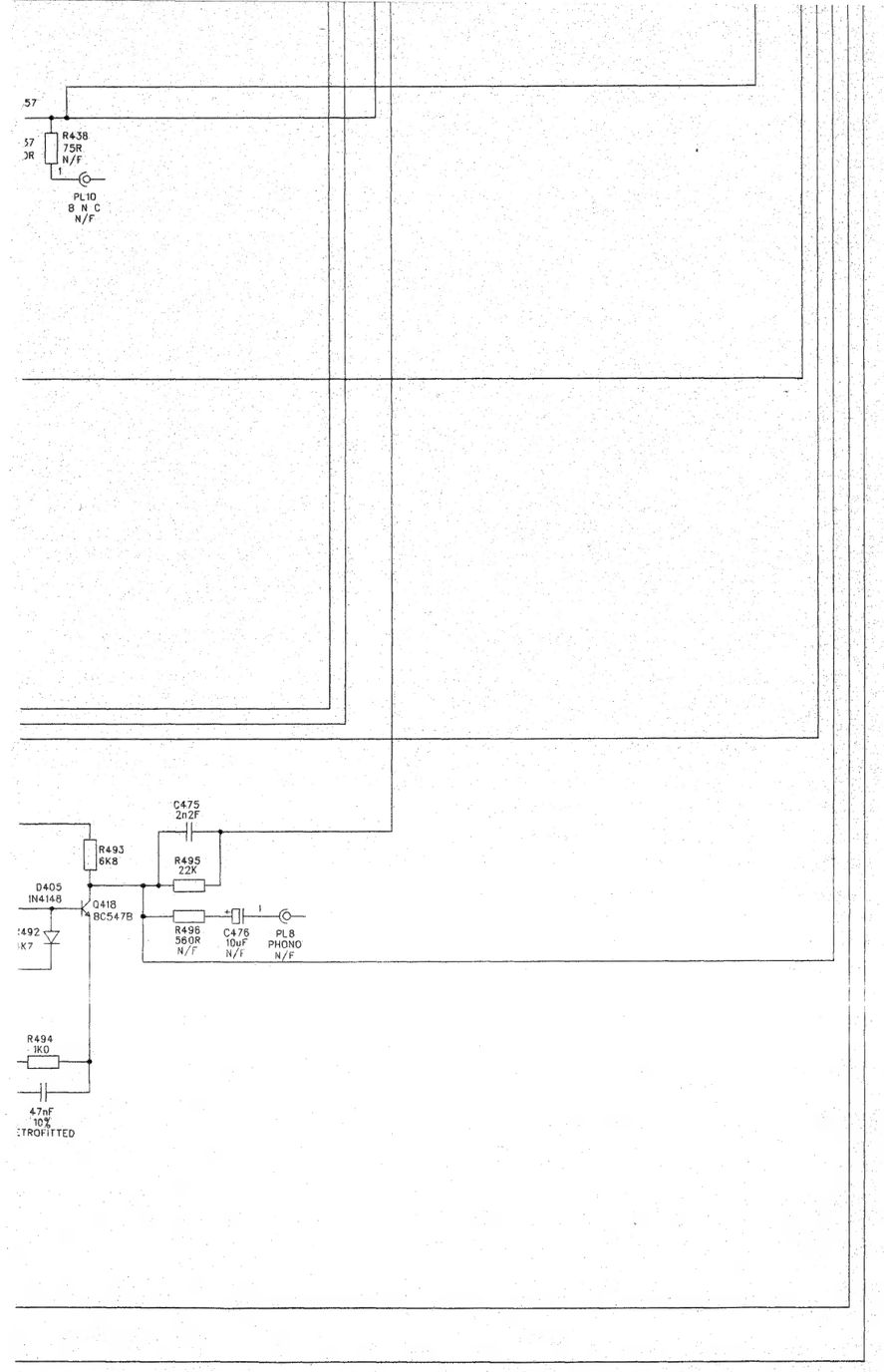
R396 560R N/F

C376 10uF N/F

PL7 PHONO N/F

R394 1K0

47nF 10% RETROFITTED



NOTE

All 0805 Resistors are 5% 0W1 unless otherwise stated.
All 0805 Capacitors are 50V 5% unless otherwise stated.
All Electrolytic Capacitors are 16V unless otherwise stated.
All Zener Diodes are 5% 400mW unless otherwise stated.
N/F = Not Fitted.

8

B

A